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# The National Poultry and Turkey Improvement Plans

COOPERATING IN
The NATIONAL POULTRY IMPROVEMENT PLAN
ADMINISTERED BY OFFICIAL STATE AGENCIES AND U.S. DEPARTMENT OF AGRICULTURE

COOPERATING IN
The NATIONAL TURKEY IMPROVEMENT PLAN
ADMINISTERED BY OFFICIAL STATE AGENCIES AND U.S. DEPARTMENT OF AGRICULTURE

## *AND AUXILIARY PROVISIONS*

UNITED STATES DEPARTMENT OF AGRICULTURE

The National Poultry Improvement Plan became operative July 1, 1935, with the approval of the Secretary of Agriculture and under the authority of an appropriation made by Congress for the United States Department of Agriculture, to be used in cooperation with State authorities in the administration of regulations for the improvement of poultry, poultry products, and hatcheries. The National Turkey Improvement Plan became operative September 25, 1943. Authority for the administration of the Plans is now contained in the Department of Agriculture Organic Act of 1944, as amended (7 U. S. C. 429).

The objectives of the National Poultry and Turkey Improvement Plans are to improve the production and market qualities of chickens and turkeys and to reduce losses from hatchery-disseminated diseases.

The provisions of the Plans are changed from time to time to conform with the development of the industry and with new information as it becomes available. These changes are based upon recommendations made at the biennial National Plans Conferences by official delegates representing participating flockowners, breeders, and hatcherymen from all cooperating States, in accordance with Subpart C, Part 147 of this publication.

Acceptance of either Plan is optional with the States and individual members of the industry within the States. The Plans are administered in each State by an Official State Agency cooperating with the United States Department of Agriculture. A list of the Official State Agencies and other publications relating to the Plans are available upon request to the Animal Husbandry Research Division, Agricultural Research Service, Beltsville, Md.

**Animal Husbandry Research Division**

**AGRICULTURAL RESEARCH SERVICE**

**Washington, D. C.**

**Revised April 1963**

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# The National Poultry and Turkey Improvement Plans and Auxiliary Provisions

(9 CFR, Parts 145, 146, and 147, as amended)

## Part 145—National Poultry Improvement Plan (Chickens and Certain Other Poultry)

Sec.


145.1 Definitions.
145.2 Administration.
145.3 Participation.
145.4 General provisions for all participants.
145.5 Specific provisions for participating flocks.
145.6 Specific provisions for participating hatcheries.
145.7 Specific provisions for participating dealers.
145.8 Terminology and classification; general.
145.9 Terminology and classification; hatcheries and dealers.
145.10 Terminology and classification; flocks and products.
145.11 Supervision.
145.12 Inspections.
145.13 Debarment from participation.
145.14 Blood testing.
145.15 USROP; general.
145.16 USROP; qualification of females.
145.17 USROP; qualification of males.
145.18 USROP; sale of products.
145.19 USROP; annual summary.
145.20 USROP; duties of ROP Supervisor.
145.21 USROP; duties of ROP Inspector.
145.22 U.S. Performance Tested Parent Stock; general.
145.23 U.S. Performance Tested Parent Stock; qualification.
145.24 U.S. Performance Tested Parent Stock; sale of products.
145.25 Random sample tests; general.
145.26 Random sample egg production test.
145.27 Random sample meat production test.
145.28 Random sample tests; combined summary.


SEC. 145.1 **Definitions.** Words used in this Part in the singular form shall be deemed to import the plural, and vice versa, as the case may demand. Except where the context otherwise requires, for the purposes of this Part the following terms shall be construed, respectively, to mean:

(a) **Plan.** The provisions of the National Poultry Improvement Plan contained in this Part.

(b) **Person.** A natural person, firm, or corporation.

(c) **Department.** The United States Department of Agriculture.

(d) **AH Division.** The Animal Husbandry Research Division of the Agricultural Research Service of the Department.

(e) **State.** Any State, the District of Columbia or Puerto Rico.

(f) **Official State Agency.** The State authority recognized by the Department to cooperate in the administration of the Plan.

(g) **State Inspector.** Any person employed or authorized under section 145.11(b) to perform functions under this Part.

(h) **Authorized Agent.** Any person designated under section 145.11(a) to perform functions under this Part.

(i) **ROP Supervisor.** The person employed or authorized to perform functions under section 145.20.

(j) **ROP Inspector.** The person employed or authorized to perform functions under section 145.21.

(k) **Affiliated flockowner.** A flockowner who is participating in

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the Plan through an agreement with a participating hatchery.

(l) **Flock**—(1) **As applied to breeding.** All chickens of one kind of mating (breed and variety or combination of stocks) and of one classification on one farm;

(2) **As applied to disease control.** All of the chickens on one farm except that, at the discretion of the Official State Agency, any group of chickens which is segregated from another group and has been so segregated for a period of at least 21 days may be considered as a separate flock.

(m) **Hatchery.** Hatchery equipment on one premises operated or controlled by any person for the production of chicks.

(n) **Products.** Chicken breeding stock and hatching eggs, and chicks.

(o) **Baby chicks.** Chicks that have not been fed or watered.

(p) **USROP or ROP.** U.S. Record of Performance.

(q) **Strain.** Chicken breeding stock bearing a given name produced by a breeder through at least five generations of closed flock breeding.

(r) **Stock.** A term used to identify the progeny of a specific breeding combination of chickens. These breeding combinations may include pure strains, strain crosses and breed crosses, or combinations thereof.

Sec. 145.2 **Administration.** (a) The Department cooperates through a Memorandum of Understanding with Official State Agencies in the administration of the Plan.

(b) The Official State Agency shall carry out the administration of the Plan within the State according to the applicable provisions of the Plan and Memorandum of Understanding. An Official State Agency may accept for participation an affiliated flock located in another State under a mutual understanding and agreement, in writing, between the two Official State Agencies regarding conditions of participation and supervision.

(c) The Official State Agency of any State may adopt regulations applicable to the administration of the Plan in such State further defining the provisions of the Plan or establishing higher standards compatible with the Plan.

Sec. 145.3 **Participation.** (a) Any person producing or dealing in poultry products may participate in the Plan when he has (1) demonstrated, to the satisfaction of the Official State Agency, that his facilities, personnel, and practices are adequate for carrying out the applicable provisions of the Plan; and (2) signed an agreement with the Official State Agency to comply with the general and the applicable specific provisions of the Plan and any regulations of the Official State Agency under section 145.2. Affiliated flockowners may participate without signing an agreement with the Official State Agency.

(b) Each participant shall comply with the Plan throughout the operating year of the Official State Agency, or until released by such Agency.

(c) A participant in any State shall participate with all of his chicken hatching egg supply flocks and hatchery operations within such State.

(d) No person shall be compelled by the Official State Agency to qualify products for any of the classifications described in section 145.10 (a), (b), (c), (d) and (e) as a condition of qualification for either of the classifications described in section 145.10 (f) and (g).

(e) Participation in the Plan shall entitle the participant to use the Plan emblem reproduced below:

FIGURE 1.

SEC. 145.4 **General provisions for all participants.** (a) Records of purchases and sales and the identity of products handled shall be maintained in a manner satisfactory to the Official State Agency.

(b) Products, records of sales and purchase of products, and material used to advertise products shall be subject to inspection by the Official State Agency at any time.

(c) Advertising must be in accordance with the Plan, and applicable rules and regulations of the Official State Agency and the Federal Trade Commission. A participant advertising products as being of any official classification may include in his advertising reference to associated or franchised hatcheries only when such hatcheries produce the same kind of products of the same classification.

(d) Participants may not buy or receive for any purpose products from non-participants, or sell products of non-participants, except with the permission of the Official State Agency for use in breeding flocks or for experimental purposes.

(e) The minimum weight of chicken hatching eggs sold shall be $1\frac{11}{12}$ oz. each for replacement stock and $1\frac{10}{12}$ oz. each for broiler stock, except as otherwise specified by the purchaser of the eggs.

(f) Each shipment of products to points outside the continental United States shall be accompanied by a properly executed Form NPIP–15F, Report of Sales of Hatching Eggs, Chicks and Poults (For Shipment Outside the United States).

SEC. 145.5 **Specific provisions for participating flocks.** (a) Poultry equipment, and poultry houses and the land in the immediate vicinity thereof, shall be kept in sanitary condition, and effective July 1, 1963, the participating flock, its eggs, and all equipment used in connection with the flock shall be separated from non-participating flocks, in a manner acceptable to the Official State Agency. The procedures outlined in sections 147.31 and 147.32 (a) and (e) of this chapter shall be considered as a guide in determining compliance with this provision.

(b) All flocks shall consist of healthy, normal individuals characteristic of the breed and variety, cross, or other combination which they are stated to represent.

(c) A flock shall be deemed to be a participating flock at any time only if it has been officially blood tested within the past 12 months with no pullorum or typhoid reactors on the last test. (See sec. 145.14 relating to the official blood test.)

(d) Each bird shall be identified with a sealed and numbered band obtained through or approved by the Official State Agency, provided that exception may be made at the discretion of the Official State Agency.

SEC. 145.6 **Specific provisions for participating hatcheries.**

(a) Hatcheries, including brooder rooms, shall be kept in sanitary condition, acceptable to the Official State Agency. The procedures outlined in section 147.32 through 147.35 of this chapter shall be considered as a guide in determining compliance with this provision. The minimum require-

ments with respect to sanitation shall include the following:

(1) Incubator walls, floors and trays shall be kept free from broken eggs and egg shells.

(2) Tops of incubators and hatchers shall be kept clean (not used for storage).

(3) Entire hatchery, including sales room, shall be kept in a neat, orderly condition and free from accumulated dust.

(4) Hatchery residue such as egg shells, infertile eggs and dead germs shall be disposed of promptly.

(5) Hatchers and hatching trays shall be cleaned and fumigated or disinfected after each hatch, preferably using the procedures outlined in sections 147.34(b) and 147.35(e) of this chapter.

(6) All eggs should be fumigated at the hatchery as described in section 147.35 (a) or (b) or (c) of this chapter. All eggs should be refumigated after transfer to the hatcher as described in section 147.35(d) of this chapter.

(b) A hatchery which keeps started poultry (poultry that has been fed or watered) must keep such poultry separated from the incubator room in a manner satisfactory to the Official State Agency.

(c) All chicks offered for sale under Plan terminology shall be normal and typical of the breed and variety, cross, or other combination represented.

(d) Eggs incubated shall be sound in shell, typical for the breed and variety, strain, or cross thereof and reasonably uniform in shape. Mediterranean breed eggs shall be reasonably free from tints. Hatching eggs shall be trayed and the chicks boxed with a view to uniformity of size.

(e) All hatcheries within a State which are operated under the ownership or management of the same person or persons or related corporations, or in which the same person or persons have a substantial financial interest as partners or otherwise, shall participate in the Plan if any of them are to participate. All breeding and supply flocks, hatching eggs and chicks of such hatcheries shall meet the same pullorum-typhoid classification.

Sec. 145.7 **Specific provisions for participating dealers.** Dealers in chicken breeding stock or hatching eggs or chicks shall comply with all provisions in this Part which apply to their operations.

Sec. 145.8 **Terminology and classification; general.** (a) The official classification terms defined in sections 145.9 and 145.10 and the various designs illustrative of the official classifications as reproduced in section 145.10 may be used only by participants and to describe products that have met all the specific requirements of such classifications.

(b) Products produced under the Plan shall lose their identity under Plan terminology when they are purchased for resale by, or consigned to, non-participants.

(c) Participating flocks and the eggs and chicks produced from them may be designated by their strain or trade name. When a breeder's name or strain designation is used, the participant shall be able by records to substantiate that the products so designated are from flocks that are composed of either (1) birds hatched from eggs produced under the direct supervision of the breeder of such strain; or (2) stock multiplied by persons designated and so reported by the breeder to each Official State Agency concerned.

(d) Domesticated waterfowl, game birds and guineas meeting the requirements for participation for any of the classifications specified in section 145.10 may be designated as coming within such classification.

Sec. 145.9 **Terminology and classification; hatcheries and dealers.** Participating hatcheries

and dealers shall be designated as "National Plan Hatchery" and "National Plan Dealer", respectively. Each participating hatchery or dealer may be assigned a permanent approval number by the AH Division. This number may appear on each invoice and shipping label for each separate sale of chicks or eggs. The approval number shall be withdrawn when the hatchery or dealer no longer qualifies for participation in the Plan. All Official State Agencies shall be notified by the AH Division of additions, withdrawals and changes in classification.

SEC. 145.10 **Terminology and classification; flocks and products.** Participating flocks, and the eggs and chicks produced from them, which have met the respective requirements specified in this section may be designated by the following terms or illustrative designs:

(a) **U.S. Record of Performance.** Females meeting prescribed standards for performance as individuals or families as provided in section 145.16 or males meeting the requirements in section 145.17.

FIGURE 2.

(b) **U.S. Performance Tested Parent Stock.** Stock meeting the requirements prescribed in section 145.23. This classification may be applied only to flocks maintained under the direct supervision of the qualifying breeder or by a multiplier designated by the breeder.

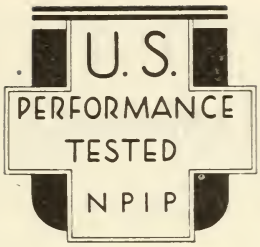


FIGURE 3.

(c) **U.S. Certified for Eggs.** (1) All males ROP, or (2) all males and females from Performance Tested Parent Stock for egg production mated in the same combination as used in the qualifying parent flock.

FIGURE 4.

(d) **U.S. Certified for Meat.** All males and females from Performance Tested Parent Stock for meat production mated in the same combination as used in the qualifying parent flock.

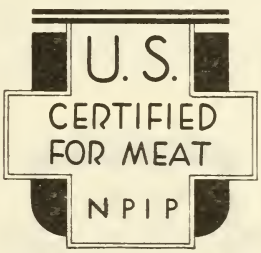


FIGURE 5.

(e) **U.S. Approved.** All males and females selected by Authorized Agents according to standards prescribed by the Official State Agency or the State College of Agriculture.

FIGURE 6.

(f) **U.S. Pullorum-Typhoid Passed.** Flocks in which no pullorum or typhoid reactors were found on the last official blood test provided for in section 145.5(c).

FIGURE 7.

(g) **U.S. Pullorum-Typhoid Clean.** Flocks in which no pullorum or typhoid reactors were found on the first official blood test provided for in section 145.5(c): *Provided*, That if a reactor or reactors are found on the first test the flock may qualify with two consecutive official negative tests. In order to sell hatching eggs or chicks of this classification all hatching eggs and chicks handled must meet these requirements.

FIGURE 8.

SEC. 145.11 **Supervision.** (a) The Official State Agency may designate qualified persons as Authorized Agents to do the selecting, blood collecting and blood testing work provided for in sections 145.5, 145.10, and 145.14.

(b) The Official State Agency shall employ or authorize qualified persons as State Inspectors to perform, or supervise the performance of, the selecting and testing of participating flocks and to perform the official inspections necessary to verify compliance with the requirements of the Plan.

SEC. 145.12 **Inspections.** (a) Each participating hatchery shall be inspected a sufficient number of times each year to satisfy the Official State Agency that the operations of the hatchery are in compliance with the provisions of the Plan.

(b) Each year a sample of the flocks selected or tested by each Authorized Agent shall be inspected by a State Inspector. This must include the inspection of a minimum of 15 percent of the flocks of each hatchery. Each flock inspection shall include the examination of a sufficient number of males and females and, in flocks qualified for participation by the whole-blood test, the blood testing of a sufficient number of birds, to determine whether the work of the Authorized Agent was satisfactory and that the flock is qualified for participation.

SEC. 145.13 **Debarment from participation.** Noncompliance with the provisions of the Plan, or regulations of the Official State Agency under section 145.2, not corrected within the time specified by the Official State Agency, shall be grounds for the Official State Agency to bar a participant from further participation for a period to be determined in each case by the Official State Agency. Such action shall not be taken until a thorough investigation has been made by the

Official State Agency and the participant has been given an opportunity for a hearing.

Sec. 145.14 **Blood testing.** (a) The official blood test shall be the standard tube agglutination test, the rapid serum test, or the stained-antigen, rapid, whole-blood test, conducted by an Authorized Agent or State Inspector. The recommended procedures for conducting such tests are described in Subpart A, Part 147, of this chapter. Each lot of antigen used for the whole-blood test shall be approved by the Department and shall be of the polyvalent type.

(b) There shall be an interval of at least 21 days between any official blood test and any previous test with pullorum-typhoid antigen.

(c) All chickens to be used as breeders must be tested when more than five months of age.

(d) All domesticated fowl on the farm of the participant shall either be properly tested to meet the same standards as the participating flock or these birds and their eggs shall be separated from the participating flock and its eggs.

(e) All tests with Salmonella antigens of flocks participating in or candidates for participation in the Plan shall be reported to the Official State Agency within 10 days following the completion of such tests. All reactors shall be considered in determining the classification of the flock.

(f) Reactors may be submitted to a laboratory for autopsy and bacteriological examination. The laboratory and the number of reactors to be submitted shall be designated by the Official State Agency. The recommended minimum procedure for bacteriological examination is described in Subpart B, Part 147 of this chapter. When reactors are submitted within 10 days from date of reading the test and the bacteriological examination fails to demonstrate pullorum or typhoid infection, the flock shall be deemed to have had no pullorum or typhoid reactors. If other members of the Salmonella group or paracolons are isolated, the Official State Agency may disqualify the flock for participation, or require such other action as is deemed necessary with respect to the infection.

(g) When evidence indicates that pullorum disease or fowl typhoid outbreaks are occurring in chicks, the Official State Agency may, at its discretion, require additional testing of the flock or flocks involved. If pullorum or typhoid is found, the flock involved immediately loses its classification and must be retested to meet the requirements outlined in section 145.10 (f) or (g). Furthermore, in such cases the Official State Agency may require that the hatching eggs from such flocks be removed from the incubator and destroyed prior to hatching.

(h) Any drug, for which there is scientific evidence of masking the test reaction or hindering the bacteriological recovery of Salmonella organisms, shall not be fed or administered to poultry within three weeks prior to a test or bacteriological examination upon which a Salmonella classification is based.

Sec. 145.15 **USROP; general.** (a) The ROP classification may be attained by the qualification of individual birds through trapnesting and pedigree breeding under the supervision of an Official State Agency.

(b) Any person who, in the opinion of the Official State Agency, has the facilities for conducting a systematic program of poultry breeding is eligible for ROP participation.

(c) Candidates may consist of any breed and variety, strain or cross thereof.

(d) Birds trapnested for qualification on the basis of either 8 months or 365 days of trapnesting may be withdrawn within 4 months

after the date of the first egg laid by the family, provided the entire (dam) family is withdrawn.

(e) The average egg weight of all birds entered (to be reported in the annual summary) shall be based on the average of not less than the first five and not more than the first ten individual egg weights taken by the breeder and ROP inspector at a time previously agreed upon by the breeder and Official State Agency.

(f) Participants are encouraged to enter random sample tests annually as a further measure of the performance of their stock. Entries to be reported in the annual ROP summary in addition to or in lieu of the candidate report shall be so designated by the participant, to the ROP Supervisor, prior to the beginning of the test.

Sec. 145.16 **USROP; qualification of females.** (a) Females may qualify as ROP females as follows:

(1) If an individual bird has laid at the rate of 60 percent or more during a period of at least 8 months, when trapnested a minimum of five days per month and a minimum of 50 days; or

(2) If the members of an entire family of six or more full sisters have laid at an average rate of 65 percent or more during a period of at least 8 months, when trapnested a minimum of five days per month and a minimum of 50 days; or

(3) If the members of an entire family of eight or more full sisters have laid at an average rate of 70 percent or more when trapnested a minimum of five days per week and a minimum of 13 consecutive weeks.

(b) The trapnest period for each bird shall start with the first egg laid in a trapnest by such bird.

Sec. 145.17 **USROP; qualification of males.** A male may qualify as an ROP male provided:

(a) The pedigree record and wing band shall show that he was produced from an ROP sire and an ROP dam in a single-male mating, except that for beginning ROP participants a male may qualify on other bases acceptable to the Official State Agency and the AH Division, such as having a full sister family meet the requirements of section 145.16(a)(2) or (3); and

(b) In any event the male shall meet the following physical requirements:

(1) Exhibit health and constitutional vigor and show no evidence of any disease; for example, misshaped pupil or deformed leg indicative of leukosis;

(2) Show no serious physical deformities such as crooked back, wry tail, crooked beak, extremely crooked breast bone or toes; and

(3) Be reasonably representative of the breed and variety and meet the minimum weight standards as currently specified in the Standard of Perfection published by the American Poultry Association.

Sec. 145.18 **USROP; sale of products.** When products are sold or offered for sale under the ROP classification:

(a) The breeder must have on file evidence that such products are from single male matings of qualified ROP males and ROP females.

(b) A copy of such evidence, including records of egg production, hatching and pedigree, must be submitted routinely to the Official State Agency.

(c) Eggs sold, or set for the sale of chicks or stock, shall weigh at least $1\frac{11}{12}$ ounces each.

(d) Reports of trapnest records shall be in terms of percent production, except that records based on 3-, 4-, 5-, 6-, or 7-day-a-week-trapnesting for a 365-day trapnest period, may be reported in number of eggs. Only records which result from trapnesting the same days of each week may be converted

to number of eggs. Reports of trapnest records referred to in advertising or in any other way shall show the length of the qualifying period on which such records were based.

Sec. 145.19 **USROP; annual summary.** The ROP Supervisor shall submit to the AH Division for publication:

(a) For ROP participants having an entry in a random sample egg production test as provided in section 145.15(f), the report specified in section 145.26(c).

(b) For ROP participants having no entry in a random sample egg production test as provided in section 145.15(f) and for other participants at their request a report comprised of the following:

(1) Breed and variety of the entry (indicate if the entry is a cross bred or strain cross);

(2) Total number of pullets of this breed and variety on the farm;

(3) Basis of qualifying ROP females as provided in section 145.16:

(i) Individual birds producing 219 eggs in 365 days based on 3 or more days of trapnesting a week;

(ii) Individual birds otherwise meeting the requirement of 60 percent production during a period of at least 8 months;

(iii) Families of 6 or more meeting the requirement of 65 percent production during a period of at least 8 months;

(iv) Families of 8 or more meeting the requirement of 70 percent production during at least 13 consecutive weeks;

(4) Number of birds of this breed and variety originally trapnested for ROP entry;

(5) Number of birds withdrawn;

(6) Number of birds entered in ROP;

(7) Number of birds entered which were individually pedigreed;

(8) Number meeting the ROP requirements;

(9) Percentage of birds entered meeting the ROP requirements;

(10) Percentage of birds entered meeting the ROP requirements on 365-day basis;

(11) Average egg production of all birds entered for qualification on basis of 8 months or 365 days reported in percentage production and number of eggs, respectively;

(12) Average egg weight of all birds entered;

(13) Average body weight of all birds entered (optional with the breeder).

Sec. 145.20 **USROP; duties of ROP Superviser.** The ROP supervisor shall represent the Official State Agency in its supervision of ROP participation. His duties shall include:

(a) Keeping on file in his office for at least five years a record of:

(1) All qualified males, with at least one-generation pedigree showing records of egg production of the female ancestors;

(2) All qualified females with records of their egg production for their qualifying period; and

(3) All single-male matings.

(b) Submitting the reports required in section 145.19.

Sec. 145.21 **USROP; duties of ROP Inspector.** The ROP Inspector shall work under the direction of the ROP Supervisor. He shall:

(a) Visit, and inspect the work of each breeder at least four times a year, his visits to be so timed that each season of the year shall be represented and at least three of these visits shall be unannounced;

(b) Trapnest on each inspection enough pens of ROP candidates to satisfy the Official State Agency as to the accuracy of the breeder's trapnest records;

(c) During the official egg weighing period for the breeder provided under section 145.15(e), weigh and record the weight of the eggs laid by each bird trapnested;

(d) Examine hens apparently out of production and determine whether they are being credited with eggs;

(e) During the breeding season, examine all birds in single-male matings to see that the birds which constitute these matings are properly listed with the supervisor;

(f) Compare the number of eggs being incubated from each hen with the number she is credited with having laid during the corresponding period, and subsequently with the number of chicks recorded as hatched and wing-banded. (He shall have the authority to examine for fertility the eggs being incubated.)

(g) Make an annual inspection of pedigree-hatching facilities and methods and chick-banding techniques.

Sec. 145.22 **U.S. Performance Tested Parent Stock; general.**

(a) The Performance Tested Parent Stock classification may be attained by a stock represented by an entry in a random sample test for which the records have been included in a combined summary published by the AH Division.

(b) Application for the classification shall be made to the Official State Agency by the breeder of the parent stock. Such application, if acceptable to the Official State Agency, shall be submitted to the AH Division.

Sec. 145.23 **U.S. Performance Tested Parent Stock; qualification.** (a) Stocks offered for qualification under section 145.22 may qualify as:

(1) Performance Tested Parent Stock for egg production when the regressed mean of the stock for income above feed and chick cost per pullet housed, as published in the combined summary, exceeds the overall mean for all entries in all tests or is not significantly different, at the 5 percent level of probability, from the stock with the highest regressed mean.

(2) Performance Tested Parent Stock for meat production when the regressed mean of the stock for rate of growth (average live weight at completion of test) and for rate of egg production on a hen-housed basis, as published in the combined summary, exceeds the overall mean for all entries in all tests or is not significantly different, at the 5 percent level of probability, from the stock with the highest regressed mean.

(b) Qualification for the U.S. Performance Tested Parent Stock classification shall be determined by the AH Division from records published in the combined summary, and that Division shall notify each applicant and his Official State Agency of his qualification or failure to qualify.

(c) Stock classified as Performance Tested Parent Stock may retain that classification for one year after qualification, provided the stock is maintained under the supervision of the qualifying breeder, and is mated in the same combination, and for one more year when, in addition, the stock has been continuously represented by an entry for which the test results have been included in the combined summary. When the entry on which qualification is based is the progeny of a combination of two stocks which are distributed commercially under different strain or trade names, each stock may be designated as Performance Tested Parent Stock, but this interrelationship shall be specified when the classification of either stock is referred to in advertising or certification.

Sec. 145.24 **U.S. Performance Tested Parent Stock; Sale of products.** When products are sold or offered for sale as Performance Tested Parent Stock, the breeder shall be able to substantiate by records filed with the Official State Agency that such products are qualified for this classification.

Sec. 145.25 **Random sample tests; general.**

(a) The tests shall obtain specified performance data on representative samples of the stocks of two or more breeders, maintained under equal treatment with respect to housing, feeding, and management, at each test location.

(b) The tests shall be conducted by an impartial public agency.

(c) Samples shall be taken, preferably under the supervision of the Official State Agency, in accordance with the following procedures:

(1) The number and location of all flocks within the State supplying eggs of the grade to be tested shall be determined from Official State Agency records. By a process of drawing at random names or assigned numbers, determination shall be made from which of these flocks the sample is to be taken. The flock or flocks from which the sample is taken must include at least 1,000 birds.

(2) The eggs shall be taken from the nests, the farm egg room, or cases of hatching eggs or setting trays in the hatchery, in proportion to the number of birds in each flock represented.

(3) The sample shall not include eggs which, in the opinion of the sample taker, are unsuitable for hatching.

(4) The sample shall be placed in an appropriate container and the container sealed with a distinctive seal or sealing tape by the sample taker.

(5) The sample taker shall furnish the Official State Agency and the test supervisor with a detailed report of the procedures followed in obtaining each sample.

(d) Entries shall be maintained in two or more replicates and the performance of the replicates recorded separately.

(e) Pen assignments shall be made at random to reduce to a minimum any bias in results due to pen location.

Sec. 145.26 **Random sample egg production test.**

(a) A minimum of 50 pullet chicks, hatched from the egg sample, shall be started for each entry.

(b) Records shall be kept on the performance of each entry until the birds reach 500 days of age.

(c) At the end of the test, and no later than November 1, the Supervisor shall submit to the AH Division, for analysis and publication, a summary for each entry covering the following items:

(1) Name and address of entrant and the source of the sample;

(2) Breed or cross of breeds entered (indicating if entry is a pure strain, line cross, strain cross, breed cross, incross, incrossbreed or synthetic);

(3) Strain or trade name;

(4) Percent mortality to 150 day of age or subsequent age at housing;

(5) Percent laying house mortality computed from 150 days of age or subsequent age at housing to 500 days of age;

(6) Days of age to 50 percent production calculated from the first day of the first two consecutive days of 50 percent production for living birds in the entry at that time;

(7) Number of eggs per pullet housed to 500 days of age;

(8) Percent hen-day production from the time the birds reached 50 percent production to 500 days of age;

(9) Income over feed and chick cost per pullet housed, with chick cost in 1,000 lots at hatch date adjusted for mortality (accidental deaths, sexing errors and missing chicks not included);

(10) Pounds of feed per 24 ounces of eggs produced (weight of eggs produced shall be computed from production and egg weight records (bulk weighings) for each two week period throughout the test);

(11) Average annual egg weight computed from bulk weighings at least every two weeks or two days a month at equal intervals;

(12) Body weight at 150 days of age or subsequent age at housing and at the end of test;

(13) Albumen quality—Haugh Units measured on one day's eggs per quarter or every three months, at equal intervals, broken-out basis;

(14) Percentage of eggs with large blood spots, 1/8 inch or more, computed from at least three days' eggs per quarter, broken-out basis;

(15) Percentage of eggs with small blood spots, less than 1/8 inch, computed from at least three days' eggs per quarter, broken-out basis;

(16) Percentage of eggs with large colored meat spots, 1/8 inch or more, computed from at least three days' eggs per quarter, broken-out basis;

(17) Percentage of eggs with small colored meat spots, less than 1/8 inch, computed from at least three days' eggs per quarter, broken-out basis;

(18) Shell thickness by direct measurement to the nearest 1/1000 inch from at least one breakout each quarter.

Sec. 145.27 **Random sample meat production test.**

(a) For the growing phase:

(1) An entry shall consist of at least 200 chicks hatched from a sample of eggs obtained as prescribed in section 145.25 or from an entry of the stock in the laying phase;

(2) Records shall be kept on the performance of each entry for a period determined by the test management;

(3) At the end of the test and no later than February 1, the Supervisor shall submit to the AH Division, for analysis and publication, a summary for each entry covering the following items:

(i) Name and address of the entrant and the source of the sample;

(ii) Breed and strain or trade name of stock entered (including, for entries involving a cross of stocks, the identification of the stocks represented by the males and females in the parent flock);

(iii) Viability of chicks started to completion of test;

(iv) Average live weight of all pullets at completion of test;

(v) Average live weight of all cockerels at completion of test;

(vi) Percent eviscerated yield, by sexes, based on the live and eviscerated weights of all birds, or at least 50 birds of each sex selected at random, at the completion of the test;

(vii) Percent weight distribution in each U.S. Grade, by sexes, based on United States Classes, Standards and Grades for Poultry as contained in 7 CFR, Part 70, Subpart B (all factors considered except handling and dressing defects);

(viii) Feed conversion expressed as the pounds of feed required to produce a pound of live weight to the completion of test; and

(b) For the laying phase:

(1) An entry shall consist of a mating, including at least 50 pullets, representative of the stock entered. The birds in the entry shall be produced from a sample of eggs obtained as prescribed in section 145.25;

(2) Records shall be kept on the performance of each entry for a growing period of at least 150 days and an egg production period of 240 days;

(3) At the end of the test and no later than January 1, the Supervisor shall submit to the AH Division, for analysis and publication, a summary for each entry covering the following items:

(i) Name and address of the entrant and the source of the sample;

(ii) Breed and strain or trade name of the stock entered and, for entries comprised of males of one

and females of a different stock the identification of each stock;

(iii) Percent mortality to 150 days of age or to subsequent age at housing;

(iv) Percent mortality from 150 days of age or subsequent age at housing, to end of the 240-day period;

(v) Number of eggs per pullet housed to end of the 240-day period;

(vi) Percent hen-day production from the time the birds reached 50 percent production to end of the 240-day period. (The time of reaching 50 percent production shall be the first day of the first two consecutive days of 50 percent production for living birds in the entry at that time);

(vii) Average egg weight as computed from bulk weighings of all eggs laid at least one day a month;

(viii) Percent hatchability of all eggs set;

(ix) Body weight of females at end of test;

(x) Pounds of feed consumed during the 240-day period per dozen of eggs produced.

Sec. 145.28 **Random sample tests; combined summary.**

(a) The combined summary published by the AH Division shall include the results of all acceptable tests, combined by stocks, with adjustments for tests differences and the use of other accepted statistical procedures.

(b) The provision specified in sections 145.25 and 145.26 or section 145.27 shall be used by the AH Division as a guide for determining acceptability of test results for inclusion in the combined summary.

## Part 146—National Turkey Improvement Plan (Turkeys and Certain Other Poultry)

Sec.


146.1 Definitions.
146.2 Administration.
146.3 Participation.
146.4 General provisions for all participants.
146.5 Specific provisions for participating flocks.
146.6 Specific provisions for participating hatcheries.
146.7 Specific provisions for participating dealers.
146.8 Terminology and classification; general.
146.9 Terminology and classification; hatcheries and dealers.
146.10 Terminology and classification; flocks and products.
146.11 Supervision.
146.12 Inspections.
146.13 Debarment from participation.
146.14 Blood testing.
146.15 USROP; general.
146.16 USROP; participation.
146.17 USROP; candidate matings.
146.18 USROP; qualification of hens.
146.19 USROP; qualification of toms.
146.20 USROP; exceptions to requirements for qualification.
146.21 USROP; qualified matings.
146.22 USROP; mass matings.
146.23 USROP; hatching eggs.
146.24 USROP; poults.
146.25 USROP; participants producing ROP poults from purchased eggs.
146.26 USROP; sale of products.
146.27 USROP; duties of ROP Supervisor.
146.28 USROP; duties of ROP Inspector.
146.29 Turkey reproduction test.
146.30 Central turkey meat production test.


Sec. 146.1 **Definitions.** Words used in this Part in the singular form shall be deemed to import the plural, and vice versa, as the case may demand. Except where the context otherwise requires, for the purposes of this Part the following terms shall be construed, respectively, to mean:

(a) **Plan.** The provisions of the National Turkey Improvement Plan contained in this Part.

(b) **Person.** A natural person, firm, or corporation.

(c) **Department.** The United States Department of Agriculture.

(d) **AH Division.** The Animal Husbandry Research Division of the Agricultural Research Service of the Department.

(e) **State.** Any State, the District of Columbia or Puerto Rico.

(f) **Official State Agency.** The State authority recognized by the Department to cooperate in the administration of the Plan.

(g) **State Inspector.** Any person employed or authorized under section 146.11(b) to perform functions under this Part.

(h) **Authorized Agent.** Any person designated under section 146.11(a) to perform functions under this Part.

(i) **ROP Supervisor.** The person employed or authorized to perform functions under section 146.27.

(j) **ROP Inspector.** The person employed or authorized to perform functions under section 146.28.

(k) **Affiliated flockowner.** A flockowner who is participating in the Plan through an agreement with a participating hatchery.

(l) **Flock—(1) As applied to breeding.** All turkeys of one kind of mating (variety or combination of stocks) and of one classification on one farm;

(2) **As applied to disease control.** All of the turkeys on one farm, except that at the discretion of the Official State Agency, any group of turkeys which is segregated from another group and has been so segregated for a period of at least 21 days may be considered as a separate flock.

(m) **Hatchery.** Hatchery equipment on one premises operated or controlled by any person for the production of poults.

(n) **Products.** Turkey breeding stock and hatching eggs, and poults.

(o) **Baby poults.** Poults that have not been fed or watered.

(p) **USROP or ROP.** U.S. Record of Performance.

(q) **Strain.** Turkey breeding stock bearing a given name produced by a breeder through at least five generations of closed flock breeding.

(r) **Trade name or number.** A name or number compatible with State or Federal laws and regulations applied to a specified stock or product thereof, and which has been filed with the Official State Agency together with a description of such stock.

(s) **Broad-breasted.** A term used to describe a type of turkey which at the time of selection, and no later than 30 weeks of age, has a breast width at a point 1¾ inches above the keel of at least 3½ inches, for both toms and hens.

(t) **Stock.** A term used to identify the progeny of a specific breeding combination of turkeys. These breeding combinations may include pure strains, strain crosses, breed crosses, or combinations thereof.

(u) **Franchise breeder.** A breeder who normally sells products under a specific strain or trade name and who authorizes other hatcheries to produce and sell products under this same strain or trade name.

(v) **Franchise hatchery.** A hatchery which has been authorized by a franchise breeder to produce and sell products under the breeder's strain or trade name.

Sec. 146.2 **Administration.** (a) The Department cooperates through a Memorandum of Understanding with Official State Agencies in the administration of the Plan.

(b) The Official State Agency shall carry out the administration of the Plan within the State according to the applicable provisions of the Plan and Memorandum of Understanding. An Official State Agency may accept for participation an affiliated flock located in another State under a mutual understanding and agreement be-

tween the two Official State Agencies regarding conditions of participation and supervision.

(c) The Official State Agency of any State may adopt regulations applicable to the administration of the Plan in such State further defining the provisions of the Plan or establishing higher standards compatible with the Plan.

Sec. 146.3 **Participation.** (a) Any person producing or dealing in poultry products may participate in the Plan when he has (1) demonstrated, to the satisfaction of the Official State Agency, that his facilities, personnel, and practices are adequate for carrying out the applicable provisions of the Plan; and (2) signed an agreement with the Official State Agency to comply with the general and the applicable specific provisions of the Plan and any regulations of the Official State Agency under section 146.2. Affiliated flockowners may participate without signing an agreement with the Official State Agency.

(b) Each participant shall comply with the Plan throughout the operating year of the Official State Agency, or until released by such Agency.

(c) A participant in any State shall participate with all of his turkey hatching egg supply flocks and hatchery operations within such State.

(d) No person shall be compelled by the Official State Agency to qualify products for any of the classifications described in section 146.10 (a), (b), (c), (d), and (e) as a condition of qualification for the U.S. Pullorum-Typhoid Clean classification described in section 146.10(f).

(e) Participation in the Plan shall entitle the participant to use the Plan emblem reproduced below:

COOPERATING IN
The NATIONAL TURKEY IMPROVEMENT PLAN
ADMINISTERED BY OFFICIAL STATE AGENCIES AND U.S. DEPARTMENT OF AGRICULTURE

Figure 9.

Sec. 146.4 **General provisions for all participants.** (a) Records of purchases and sales and the identity of products handled shall be maintained in a manner satisfactory to the Official State Agency.

(b) Products, records of sales and purchases of products, and material used to advertise products shall be subject to inspection by the Official State Agency at any time.

(c) Advertising must be in accordance with the Plan and applicable rules and regulations of the Official State Agency and the Federal Trade Commission.

(d) Participants may not buy or receive for any purpose products from non-participants, or sell products of non-participants, except with the permission of the Official State Agency for use in breeding flocks or for experimental purposes.

(e) The minimum weight of turkey hatching eggs shipped interstate shall be 2⅓ ounces each for small varieties and 2½ ounces each for other varieties, unless otherwise specified by the purchaser of the eggs.

(f) When artificial insemination is used, its use and the extent of its use shall be stated in all performance reports.

(g) Standard and Broad Breasted turkeys of the same veriety may not be kept for commercial production on the same premises or hatched for sale in the same hatchery.

(h) Each shipment of products to points outside the continental United States shall be accompanied by a properly executed Form NPIP–15F, Report of Sales of Hatching Eggs, Chicks and Poults (For Shipment Outside the United States).

Sec. 146.5 **Specific provisions for participating flocks.** (a) Poultry equipment, and poultry houses and the land in the immediate vicinity thereof, shall be kept in sanitary condition and the participating flock, its eggs, and all equipment used in connection with the flock shall be separated from nonparticipating flocks in a manner acceptable to the Official State Agency. The procedures outlined in section 147.31 and section 147.32 (a) and (e) of this chapter shall be considered as a guide in determining compliance with this provision.

(b) All flocks shall consist of birds that have been selected for health, vigor and freedom from physical deformities of economic importance by an Authorized Agent or State Inspector.

(c) A flock shall be deemed to be a participating flock at any time only if it has been officially blood tested within the past 12 months with no pullorum or typhoid reactor on the last test. (See section 146.14 relating to the official blood test.)

(d) Each bird shall be identified with a sealed and numbered band obtained through or approved by the Official State Agency.

Sec. 146.6 **Specific provisions for participating hatcheries.** (a) Hatcheries, including brooder rooms, shall be kept in sanitary condition, acceptable to the Official State Agency. The procedures outlined in sections 147.32 through 147.35 of this chapter shall be considered as a guide in determining compliance with this provision. The minimum requirements with respect to sanitation shall include the following:

(1) Incubator walls, floors and trays shall be kept free from broken eggs and egg shells.

(2) Tops of incubators and hatchers shall be kept clean (not used for storage).

(3) Entire hatchery, including sales room, shall be kept in a neat, orderly condition and free from accumulated dust.

(4) Hatchery residue such as egg shells, infertile eggs and dead germs shall be disposed of promptly.

(5) Hatchers and hatching trays shall be cleaned and fumigated or disinfected after each hatch preferably using the procedures outlined in section 147.34(b) and 147.35(e) of this chapter.

(6) All eggs set should have been fumigated as described in section 147.35(a) of this chapter and should be refumigated as described in section 147.35(c) of this chapter or they should be fumigated as soon as possible (preferably within 12 hours) after setting as described in section 147.35(b) of this chapter. All eggs should be refumigated after transfer to the hatcher as described in section 147.35(d) of this chapter.

(b) A hatchery which keeps started poultry (poultry that has been fed or watered) must keep such poultry separated from the incubator room in a manner satisfactory to the Official State Agency.

(c) All poults offered for sale under Plan terminology shall be normal and typical of the variety, cross, or other combination represented.

(d) Eggs incubated shall be sound in shell and reasonably uniform in shape. Eggs shall be

trayed and poults boxed with a view to uniformity of size.

(e) All hatcheries within a State which are operated under the ownership or management of the same person or persons or related corporations, or in which the same person or persons have a substantial financial interest as partners or otherwise, shall participate in the Plan if any of them are to participate.

SEC. 146.7 **Specific provisions for participating dealers.** Dealers in turkey breeding stock or hatching eggs or poults shall comply with all provisions in this Part which apply to their operations.

SEC. 146.8 **Terminology and classification; general.** (a) The official classification terms defined in sections 146.9 and 146.10 and the various designs illustrative of the official classifications as reproduced in section 146.10 may be used only by participants and to describe products that have met all the specific requirements of such classifications. (See also section 146.16 (e).)

(b) Products produced under the Plan shall lose their identity under Plan terminology when they are purchased for resale by, or consigned to, non-participants.

(c) Participating flocks and the eggs and poults produced from them may be designated by their strain or trade name.

(1) A breeder's strain name may be used only when the flock is composed of (i) birds which were hatched from eggs produced under the direct supervision of the breeder or (ii) stock multiplied by persons designated and so reported by the breeder to each Official State Agency concerned.

(2) A breeder's trade name may be used only by persons authorized and so reported, to each Official State Agency concerned, by the breeder.

(d) Domesticated waterfowl, game birds and guineas meeting the requirements for participation for any of the classifications specified in section 146.10 may be designated as coming within such classification.

SEC. 146.9 **Terminology and classification; hatcheries and dealers.** Participating hatcheries and dealers shall be designated as "National Plan Hatchery" and "National Plan Dealer", respectively. Each participating hatchery or dealer may be assigned a permanent approval number by the AH Division. This number may appear on each invoice and shipping label for each separate sale of poults or eggs. The approval number shall be withdrawn when the hatchery or dealer no longer qualifies for participation in the Plan. All Official State Agencies shall be notified by the AH Division of additions, withdrawals and changes in classification.

SEC. 146.10 **Terminology and classification; flocks and products.** Participating flocks, and the eggs and poults produced from them, which have met the respective requirements specified in this section may be designated by the following terms or illustrative designs:

(a) **U.S. Record of Performance.** Males and females meeting prescribed standards as provided in sections 146.18 and 146.19. (Hatching eggs and poults designated as ROP must also meet the requirements specified in sections 146.23 and 146.24, respectively.)

FIGURE 10

(b) **U.S. Performance Tested Parent Stock.** Flocks represented in both a turkey reproduction test as provided for in section 146.29 and in a central turkey meat production test as provided for in section 146.30 by entries that have met the following performance standards:

(1) Average poult production of at least 20 salable poults per hen in 8 weeks.

(2) Poult livability to 8 weeks of age of at least 90 percent or above the average of the test.

(3) Market quality of U.S. Grade A, except for dressing and handling defects, for at least 90 percent, or above the average of the test of all birds graded.

(4) Qualification for the U.S. Performance Tested Parent Stock classification shall be determined by the AH Division from records submitted by supervisors of central turkey meat production and turkey reproduction tests; and that Division shall notify each entrant and his Official State Agency of his qualification or failure to qualify.

FIGURE 11.

(c) **U.S. Performance Tested.** All males and females from Performance Tested Parent Stock. In case the tested stock was a cross of two other stocks, the U.S. Performance Tested flock shall be the same combination of the parent stocks as used for the test entry.

(d) **U.S. Certified.** Flocks meeting one of the following specifications:

(1) All males ROP or from ROP mass matings.

(2) Males and females from flocks composed of the following: ROP males or males from ROP mass matings mated to females from ROP qualified matings; or ROP mass matings; or ROP candidate matings in which 50 percent or more of the dam's family qualified for ROP. (Poults produced under this subparagraph for use in U.S. Certified flocks shall be properly identified at hatching time.)

FIGURE 12.

(e) **U.S. Approved.** All males and females selected by Authorized Agents according to standards prescribed by the Official State Agency or the State College of Agriculture.

FIGURE 13.

(f) **U.S. Pullorum-Typhoid Clean.** Flocks in which no reactors were found on the first official blood test provided for in section 146.5 (c): *Provided*, That if reactors are found on the first test the flock may qualify with two consecutive official negative tests.

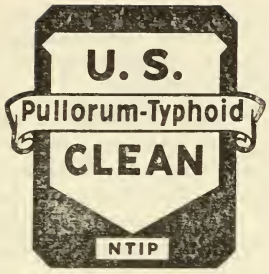


FIGURE 14.

SEC. 146.11 **Supervision.** (a) The Official State Agency may designate qualified persons as Authorized Agents to do the selecting and blood collecting provided for in sections 146.5, 146.10, and 146.14.

(b) The Official State Agency shall employ or authorize qualified persons as State Inspectors to perform, or supervise the performance of the selecting and testing of participating flocks and to perform the official inspections necessary to verify compliance with the requirements of the Plan.

SEC. 146.12 **Inspections.** (a) Each participating hatchery shall be inspected a sufficient number of times each year to satisfy the Official State Agency that the operations of the hatchery are in compliance with the provisions of the Plan.

(b) Each year at least 15 percent of the flocks selected and tested by Authorized Agents shall be inspected by a State Inspector. This must include the inspection of some flocks of each hatchery. Each flock inspection shall include the examination of a sufficient number of males and females to determine whether the work of the Authorized Agent was satisfactory and that the flock is qualified for participation.

SEC. 146.13 **Debarment from participation.** Noncompliance with the provisions of the Plan, or regulations of the Official State Agency under section 146.2, not corrected within the time specified by the Official State Agency, shall be grounds for the Official State Agency to bar a participant from further participation for a period to be determined in each case by the Official State Agency. Such action shall not be taken until a thorough investigation has been made by the Official State Agency and the participant has been given an opportunity for a hearing.

SEC. 146.14 **Blood testing.** (a) In the official blood test, the blood shall be drawn by an Authorized Agent or State Inspector and tested by an authorized laboratory, using either the standard tube agglutination or rapid serum test. The recommended procedures for conducting such tests are described in Subpart A, Part 147, of this chapter.

(b) There shall be an interval of at least 21 days between any official blood test and any previous test with pullorum-typhoid antigen.

(c) All turkeys to be used as breeders must be tested when more than four months of age.

(d) All domesticated fowl on the farm of the participant shall either be properly tested to meet the same standards as the participating flock or these birds and their eggs shall be separated from the participating flock and its eggs.

(e) All tests with Salmonella antigens of flocks participating in or candidates for participation in the Plan shall be reported to the Official State Agency within 10 days following the completion of such tests. All reactors shall be considered in determining the classification of the flock.

(f) Reactors may be submitted to a laboratory for autopsy and bacteriological examination. The laboratory and the number of reactors to be submitted shall be designated by the Official State Agency. The recommended minimum procedure for bacteriological examination is described in Sub-

part B, Part 147 of this chapter.

When reactors are submitted within 10 days from date of reading the test and the bacteriological examination fails to demonstrate pullorum or typhoid infection, the flock shall be deemed to have had no pullorum or typhoid reactors. If other members of the Salmonella group or paracolons are isolated, the Official State Agency may disqualify the flock for participation, or require such other action as is deemed necessary with respect to the infection.

(g) After a flock has been classified by the Official State Agency the result of any retesting of such flock during the current breeding and hatching season shall not adversely affect its classification for the season, except that if in the opinion of the Official State Agency the amount of reaction found in any flock is such as to be dangerous or detrimental to the operation of the Plan, the Official State Agency shall require that such flock or flocks be retested after an interval of at least 21 days, or that use of such flocks as sources of eggs for participants be immediately discontinued. Furthermore, the Official State Agency may require that the hatching eggs from such flocks be removed from the incubator and destroyed prior to hatching.

(h) Any drug, for which there is scientific evidence of masking the test reaction or hindering the bacteriological recovery of Salmonella organisms, shall not be fed or administered to turkeys within three weeks prior to a test or bacteriological examination upon which a Salmonella classification is based.

Sec. 146.15 **USROP; general.** The ROP classification is based on records of egg production, hatchability, and body weight made on the breeder's premises under supervision of the Official State Agency. Records made at State colleges of agriculture and State and Federal experiment stations may be recognized as ROP by Official State Agencies in qualifying birds for use of ROP breeders.

Sec. 146.16 **USROP; participation.** (a) Any person who, in the opinion of the Official State Agency, has the facilities for conducting a systematic program of turkey breeding is eligible for ROP participation.

(b) The participant's farm and all egg production, pedigree and sales records shall be subject at all times to unannounced inspections by the ROP Inspector.

(c) All young hens of the variety entered which are trapnested on the premises of an ROP participant shall be considered as entered in ROP.

(d) After the first two years of ROP participation, the participant shall maintain at least five candidate matings.

(e) The term "USROP" or "ROP" may be used in advertising products by any person only if he is an ROP participant and if his candidates have met all the requirements of this classification for the current or preceding season.

(f) The participant shall send to the ROP Supervisor not later than the tenth day of each month, a complete report of all trapnesting for the previous month. At the end of each four hatches, he shall also send to the ROP Supervisor on form NPIP 8 (or substitute form) a complete record of all pedigreed eggs set, poults hatched and poults banded.

Sec. 146.17 **USROP; candidate matings.** These matings shall be comprised of ROP candidate hens and ROP toms to which the following provisions apply:

(a) Each hen shall be identified with an official sealed and numbered band.

(b) Only one tom, or two full brothers, shall be allowed in a mating at any one time and the date of

entry and removal of toms shall be properly recorded.

(c) The hens shall be trapnested at regular intervals each day for at least 8 consecutive weeks.

(d) Each egg shall be accurately identified as to the hen that laid it.

(e) For each hen an accurate record shall be kept of (1) the eggs laid during the trapnesting period; (2) the number of eggs sold; (3) the number of eggs incubated; (4) the number of poults hatched; and (5) the number of poults banded.

(f) Each hen shall be weighed by the breeder or the ROP Inspector about the time the candidate begins egg production, and the weight shall be recorded as the nearest whole number.

(g) The poults from these matings shall be banded with sealed and numbered official wing bands marked "Cand".

Sec. 146.18 **USROP; qualification of hens.** An ROP candidate hen which is a reasonably good representative of the variety in the judgment of the ROP Inspector, may qualify as an ROP hen if such candidate:

(a) Produces eggs at the rate of at least 50 percent for a period of at least eight consecutive weeks from the date the first normal egg is laid in a trapnest; and

(b) Produces eggs that hatch at the rate of at least 70 percent of all eggs set with a minimum of 20 poults hatched. The qualifying requirements for hatchability may be reduced to 65 percent when eggs are hatched at altitudes of 3,000 to 3,499 feet and to 60 percent at altitudes of 3,500 feet or more. All normal eggs produced by the candidate during the period of at least eight consecutive weeks agreed upon by the breeder and the ROP Supervisor shall be set. Hatchability shall be expressed as a whole number (fractions rounded to the nearest whole number).

Sec. 146.19 **USROP; qualification of toms.** Toms may qualify for the ROP classification if they are:

(a) Produced from ROP poults or from candidate hens which subsequently qualify as ROP hens;

(b) Good representatives of the variety with strong constitutional vigor when examined by the ROP inspector not earlier than at 22 weeks of age; and

(c) Banded with an ROP sealed and numbered leg band when passed by the Inspector.

Sec. 146.20 **USROP; exceptions to requirements for qualification.** (a) When any disastrous event occurs that affects the breeder's ROP work, and when such event is immediately brought to the attention of his Official State Agency, this agency may, with the consent of the AH Division, make an equitable adjustment in the application of the qualifying requirements to such breeder.

(b) To make it possible for a breeder to get started in ROP breeding work within his own strain, during the first year of such work on his farm the tom mated with ROP candidate hens in ROP candidate matings need not be an ROP tom provided he is of equal pedigree or is a U.S. Approved tom of outstanding quality. Such toms may be used in similar matings during the second year of ROP breeding work, if re-examined and passed by the ROP Inspector. No eggs or progeny from such a mating shall be sold as ROP products. Young toms whose dams qualify for ROP classification may head U.S. Certified flocks owned or controlled by the breeder and may head ROP qualified matings on the breeder's premises.

Sec. 146.21 **USROP; qualified matings.** These matings shall be comprised of ROP hens and ROP toms and shall be maintained in ac-

cordance with the provisions of section 146.17 (a), (b), (c), (d), and (e).

Sec. 146.22 **USROP; mass matings.** (a) These matings shall be comprised of ROP hens with hatchability records of 85 percent or more, and ROP toms produced from hens with hatchability records of 85 percent or more.

(b) Pen egg production and hatchability records shall be kept.

(c) Poults from these matings shall be identified with sealed wing bands marked "Mass mated."

Sec. 146.23 **USROP; hatching eggs.** Such eggs shall be from qualified ROP matings. Each egg shall be marked with the number of the ROP hen that laid it and the pen or tom number of the mating.

Sec. 146.24 **USROP; poults.** Such poults shall be those produced from ROP hatching eggs. The poults from each hen shall be individually pedigreed by the ROP breeder or ROP Inspector and identified with sealed and numbered official wing bands at the time of hatching.

Sec. 146.25 **USROP; Participants producing ROP poults from purchased eggs.** Such participants shall:

(a) Within 5 days after incubation has begun, send to the Official State Agency a list of the ROP eggs purchased;

(b) Within 5 days after hatching time, send to the Official State Agency a list of the poults hatched from each dam and their respective wing band numbers.

Sec. 146.26 **USROP; sale of products.** (a) When ROP products are sold the seller shall, at the time of shipment, send to his ROP Supervisor a report in triplicate showing: (1) the name and address of the purchaser; (2) a list of the products sold with the pen or sire number and dam number of each; and (3) the egg production, hatchability and body weight of each dam.

(b) These reports shall be verified by the ROP Supervisor, who shall retain one copy and send one copy to the purchaser and one to the Official State Agency of the State to which the products are shipped.

Sec. 146.27 **USROP; duties of ROP Supervisor.** The ROP Supervisor shall represent the Official State Agency in the supervision of ROP participation. He shall:

(a) Keep on file in his office for at least five years a record of (1) all ROP qualified toms, with at least one-generation pedigree showing ROP records of the female ancestors; (2) all ROP qualified hens, with records of their egg production, hatchability and body weight; (3) all ROP qualified and candidate matings; and (4) all ROP poults with at least one-generation pedigree;

(b) Furnish the AH Division, for publication, an annual summary of the ROP work under his supervision, which shall include the following information for each flock:

(1) Variety of the entry;

(2) Total number of young hens of this variety on the farm;

(3) Number of ROP candidate matings;

(4) Mating procedure: (Natural mating, artificial insemination or both);

(5) Number of young hens entered for ROP classification;

(6) Number of young hens meeting the ROP requirements;

(7) Percentage of young hens entered meeting the ROP requirements;

(8) Average rate of egg production, in percent, for all candidate hens;

(9) Average hatchability of all eggs set from all candidate hens.

Sec. 146.28 **USROP; duties of ROP Inspector.** The ROP Inspec-

tor shall work under the direction of the ROP Supervisor. He shall:

(a) Visit and inspect the work of each ROP breeder at least three times each year. (His visits shall be unannounced, and at least two shall be during the trapnest period);

(b) On each visit during the trapnest period (1) do the trapnesting for the day; (2) record the eggs laid by all hens entered for ROP classification; and (3) examine hens apparently out of production and determine whether they are being credited with eggs;

(c) On at least one visit examine all birds in both ROP matings and ROP candidate matings to see that birds in these matings are properly listed with the supervisor;

(d) Compare the number of eggs being incubated from each hen with the number she is credited with having laid during the corresponding period and subsequently with the number of poults reported hatched and wingbanded. (He shall have authority to examine for fertility the eggs being incubated);

(e) Weigh each ROP candidate as provided in section 146.17(f) or check the weights of a sufficient number of candidates weighed by the breeder to satisfy himself that such weights are correct.

(f) Examine all tom and hen candidates for ROP qualification and band with sealed and numbered leg bands all qualified birds to be used or sold as being of the ROP classification. The body weight and the wing- and leg-band numbers of all toms banded shall be recorded at the time of such examination and banding.

Sec. 146.29 **Turkey reproduction test.** A turkey reproduction test is a test of the reproductive (combination of egg production and hatchability) qualities of a representative sample of the entrant's stock conducted under the supervision of the Official State Agency, in accordance with the following provisions:

(a) The test shall be available to any participant.

(b) The entry shall consist of at least 200 hens, penned separately, which are representative of the entrant's supply flocks or his breeder replacement flocks.

(c) All eggs produced by the entry during a period of at least eight consecutive weeks designated in advance by the entrant shall be incubated and complete records kept on the number of eggs produced, eggs set and salable poults hatched.

(d) The Official State Agency shall furnish the AH Division, for publication, the following information for each entry:

(1) Kind of stock (variety, strain or cross; supply flock or breeder replacement);

(2) Mating procedure: (Natural mating, artificial insemination or both);

(3) Number of breeder hens entered and total number in flocks which they represent:

(4) Average number of salable poults produced per hen entered at beginning of test.

Sec. 146.30 **Central turkey meat production test.** A central turkey meat production test is a test of a representative sample of the stock of two or more entrants, to fryer-roaster or mature marketing age, conducted under official supervision at a neutral location, in accordance with the following provisions:

(a) The test shall be available to any participant.

(b) The entry shall consist of at least 100 poults; 50 percent of each sex.

(c) A sufficient number of eggs, determined by the entrant, to produce the poults required for the entry shall be selected by a representative of the Official State Agency in accordance with the following procedure:

(1) Determine from Official State Agency records the flocks, and the number of birds in each, supplying eggs of the grade to be tested.

(2) The sample shall be taken from at least 50 percent of the flocks supplying eggs of the grade to be tested. These flocks shall be selected at random and shall comprise at least 50 percent of the birds in all such flocks. The sample shall be taken at random from eggs held in the hatchery egg room or in the egg rooms of the individual supply flocks; *Provided*, That if the egg room contains eggs from more than one flock, all eggs must be identified as to flock source.

(3) The sample shall be taken in proportion to the number of birds in each sampled flock.

(4) The sample shall not include eggs which, in the opinion of the sample taker, are unsuitable for hatching.

(5) Each egg shall be identified with a stamp furnished by the test management and placed in an appropriate container for shipment to the test.

(6) The sample taker shall furnish the Official State Agency and the test supervisor with a detailed report of the procedure followed in obtaining each sample.

(d) The sample of eggs shall be taken at random from the entrant's supply flocks or from his breeder replacement flocks.

(e) The eggs from all entrants shall be incubated in one hatchery at the same time.

(f) Poults shall be banded in each wing with a sealed and numbered band for identification.

(g) Poults shall be brooded and reared either intermingled or separated by entries, at the option of the test management, provided that varieties of different size or color shall be separated.

(h) The duration of the test shall be determined by the test management.

(i) The following data shall be obtained and reported by the Official State Agency for each entry:

(1) Kind of stock (variety, strain or cross; supply flock or breeder replacement);

(2) Mating procedure: (Natural mating, artificial insemination or both);

(3) Number of breeder hens in the flock or flocks from which egg sample was drawn;

(4) Mortality to two weeks of age; to eight weeks of age; and to the end of the test.

(5) Average live weight (i) of fryer-roaster entry at the end of test; and (ii) of mature marketing entry at 12 weeks of age; and at close of test. (Such average weights shall be based on individual weights and separated by sexes);

(6) Average eviscerated weight, including neck and giblets, of all birds completing the test, by sexes. (If neck or giblets are not included this shall be explained in all reports);

(7) Average breast width, body depth and keel length of live or New York dressed birds, by sexes. The report shall show whether the measurements were taken on live or dressed birds. (The breast width shall be measured at the widest point 1¾ inches above the keel. The body depth shall be measured at the deepest point. The keel length shall be measured by the chord from the anterior to the posterior end of the keel. These measurements shall be taken while the birds are suspended by the legs.)

(8) The percentage of birds with the following defects: Pendulous crop, roach back, leg weakness, and breast blisters.

(9) The number of birds, by sexes (expressed in percentage), in each U.S. Grade with all factors considered, except dressing defects; and the number in U.S. Grade A for each of following factors: (i)

fleshing; (ii) finish; and (iii) freedom from pinfeathers;[1]

(10) Other items of economic importance, such as dressing percentage and feed conversion, at the option of the Official State Agency and the AH Division. (Feed conversion ratio, when reported, shall be computed by two methods: (i) Total live weight of the birds at the completion of the test divided into the weight of the feed used, and (ii) total live weight of the birds at the completion of the test, plus the total weight of the birds that died during the test, divided into the weight of the feed used.)

(j) In each test the differences between the entry averages in final live and eviscerated weights and body measurements shall be analyzed by a suitable mean separation procedure such as the Duncan's Multiple Range Test. Significance or nonsignificance (at the 5 percent level) of the differences between entries shall be shown in the report published by the AH Division.

(k) The results of the tests reported to the AH Division by December 1 shall be published in a national summary by test and entry. The national summary shall also include a report of a statistical analysis of the combined results of all tests, by stocks, showing the significance of the differences between stocks.

## Part 147—Auxiliary Provisions on National Poultry and Turkey Improvement Plans

SUBPART A—BLOOD TESTING PROCEDURES


Sec.
147.1 The standard tube agglutination test.
147.2 The rapid serum test.
147.3 The stained-antigen, rapid, whole-blood test.
147.4 Tube agglutination tests for S. typhimurium.


[1] The grading will be based on United States Classes, Standards and Grades for Poultry, as contained in 7 CFR, Part 70, Subpart B.

SUBPART B—BACTERIOLOGICAL EXAMINATION PROCEDURE


147.11 Laboratory procedure recommended for the bacteriological examination of reactors.


SUBPART C—PROCEDURE FOR CHANGING NATIONAL POULTRY AND TURKEY IMPROVEMENT PLANS


147.21 Definitions.
147.22 General.
147.23 Submitting, compiling and distributing proposed changes.
147.24 Official delegates.
147.25 General Conference Committee.
147.26 Committee consideration of proposed changes.
147.27 Conference consideration of proposed changes.
147.28 Approval of conference recommendations by the Department.


SUBPART D—SANITATION PROCEDURES


147.31 Flock sanitation.
147.32 Hatching egg sanitation.
147.33 Hatchery sanitation.
147.34 Cleaning and disinfecting.
147.35 Fumigation.


### Subpart A—Blood Testing Procedures

Sec. 147.1 **The standard tube agglutination test**[2] (a) The blood samples should be collected and delivered as follows:

(1) The blood samples should be taken by properly qualified and authorized persons only, and in containers provided by the laboratory. The containers should be stout-walled test tubes preferably ⅜ by 3 inches, without lip, or small well-selected medicine vials, which have been thoroughly cleaned and dried in a hot-air drying oven. If stoppers are used they should be thoroughly cleaned and dried.

(2) Sufficient blood should be procured by making a small incision in the large median wing vein with a small sharp lancet and allowing the blood to run into the tube, or by the use of a small syringe (with 20

[2] The procedure described is a modification of the method reported in the Proceedings of the United States Live Stock Sanitary Association, November 30 to December 2, 1932, pp. 487 to 491.

or 21 gage needle) which is properly cleansed between bleedings with physiological saline solution. To facilitate the separation of the serum the tubes should be placed in a slanted position until the blood has solidified. After the blood has completely clotted, they should be packed and shipped by mail (special delivery), rapid express, or by messenger, to the laboratory. All labeling must be clear and permanent, and may be done with a suitable pencil on etched portions of the tube, or by means of fast-gum labels.

(3) The blood samples must reach the laboratory in a fresh and unhemolyzed condition. Hemolyzed samples should be rejected. It is imperative, therefore, to cool the tubes immediately after slanting and clotting, and unless they reach the laboratory within a few hours, to pack them with ice in special containers, or use some other cooling system which will insure their preservation during transportation. In severe cold seasons, extreme precautions must be exercised to prevent freezing and consequent laking. The samples must be placed in cold (5° to 10° C.) storage, immediately upon arrival at the laboratory.

(b) The antigen shall consist of representative strains of S. pullorum which are of known antigenic composition, high agglutinability, but are not sensitive to negative and nonspecific sera. The stock cultures may be maintained satisfactorily by transferring to new sloped agar at least once a month and keeping at 18° to 25° C. (average room temperature) in a dark closet or chest, following incubation for from 24 to 36 hours at 37° C. The antigenic composition and purity of the stock cultures should be checked consistently.

(c) A satisfactory medium which has been used for a long time has the following composition:

| | |
|---|---|
| Water | 1,000 cc. |
| Difco beef extract | 4 gm. (0.4 percent) |
| Difco Bacto-peptone | 10 gm. (1.0 percent) |
| Difco dry-granular agar | 20 gm. (2.0 percent) |
| Reaction-pH | 6.8 to 7.2 |

Large 1-inch test tubes, Kolle flasks or Blake bottles should be streaked liberally over the entire agar surface with inoculum from 48-hours slant agar cultures prepared from the stock cultures of the selected strains. The antigen-growing tubes or bottles should be incubated 48 hours at 37° C. and the surface growth washed off with sufficient phenolized (0.5 percent) saline (0.85 percent) solution to make a heavy suspension. The suspension should be filtered free of clumps through a thin layer of absorbent cotton in a Buchner funnel with the aid of suction. The antigens of the separate strains should be combined in equal volume-density and stored in the refrigerator (5° to 10° C.) in tightly stoppered bottles.

(d) Thiosulfate-Glycerin (TG) medium may be used as an alternate medium for the preparation of tube agglutination antigen. The TG medium, formerly used for the preparation of stained, whole-blood antigen, is described in more detail in the article by MacDonald, A. D., Recent Developments in Pullorum Antigen for the Rapid, Whole-Blood Test, Report of the Conference of the National Poultry Improvement Plan, pages 122–127, 1941. This medium provides a tube antigen of excellent specificity and greatly increases the yield of antigen from a given amount of medium. The TG medium has the following composition:

| | |
|---|---|
| Beef infusion | 1,000 cc. |
| Difco Bacto-peptone | 20 gm. (2.0 percent) |
| Sodium thiosulfate | 5 gm. (0.5 percent) |
| Ammonium chloride | 5 gm. (0.5 percent) |

| | |
|---|---|
| Glycerin, U.S.P. (95 percent) | 20 cc. (2.0 percent) |
| Difco dry-granular agar | 30 gm. (3.0 percent) |
| Reaction-pH | 6.8 to 7.2. |

Large 1-inch test tubes, Kolle flasks, Blake bottles or Erlenmeyer flasks should be seeded over the entire agar surface with inoculum from 24-hour beef infusion broth cultures prepared from the stock cultures of the selected strains. The antigen-growing tubes or bottles should be incubated 96 hours at 37° C. and the surface growth washed off with sufficient phenolized (0.5 percent) saline (0.85 percent) solution to make a heavy suspension. The suspension should be filtered free of clumps through a thin layer of absorbent cotton in a Buchner funnel with the aid of suction. The antigen should be then centrifuged. The mass of bacteria should be removed from the centrifuge tubes or bowl and resuspended in saline (0.85 percent) solution containing 0.5 percent phenol. After the bacterial mass has been uniformly suspended in the diluent it should be again passed through a cotton pad in a Buchner funnel without the aid of suction. The antigens of the separate strains should be combined in equal volume-density and stored in the refrigerator (5° to 10° C.) in tightly stoppered bottles.

(e) The diluted antigen to be used in the routine testings should be prepared from the stock antigen by dilution of the latter with physiological (0.85 percent) saline solution containing 0.25 percent of phenol to a turbidity corresponding to 0.75–1.00 on the McFarland nephelometer scale. The hydrogen-ion concentration of the diluted antigen should be corrected to pH 8.2 to 8.5 by the addition of dilute sodium hydroxide. New diluted antigen should be prepared each day and kept cold. The diluted antigen may be employed in 2 cc. quantities in 4 by ½ inch test tubes or 1 cc. quantities in smaller tubes in which the final serum-antigen mixtures are made and incubated. The distribution of the antigen in the tubes may be accomplished by the use of long burettes, or special filling devices made for the purpose.

(f) The maximum serum dilution employed must not exceed 1:50 for chickens nor 1:25 for turkeys. The available data indicate that 1:25 dilution is the most efficient. In all official reports on the blood test the serum dilutions shall be indicated. The sera should be introduced into the agglutination tubes in the desired amounts with well-cleaned serological pipettes or special serum delivery devices which do not permit the mixing of different sera. The antigen and serum should be well mixed before incubation. The serum and antigen mixture must be incubated for at least 20 hours at 37° C.

(g) The results shall be recorded as:

N, or — (negative) when the serum-antigen mixture remains uniformly turbid.

P, or + (positive) when there is a distinct clumping of the antigen, and the liquid between the agglutinated particles is clear.

S, or ? (suspicious) when the agglutination is only partial or incomplete.

M, or missing, when samples listed on the original record sheet are missing.

H, or hemolyzed, when blood samples are hemolyzed and cannot be tested.

B, or broken, when sample tubes are broken and no serum can be obtained.

(Some allowance must always be made for the difference in sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent, intelligent judgment must be exercised at all times. Also, the histories of the flocks require consideration. In flocks where individuals show a suspicious agglutination, it is desirable to examine representative birds bacteriologically to determine the presence or absence of S. pullorum.)

Sec. 147.2 **The rapid serum test.**[3] (a) The procedure for the collection and delivery of blood samples in the rapid serum test is the same as that described in section 147.1(a).

(b) The antigen should be prepared as follows: (1) The antigen should consist of representative strains of S. pullorum which are of known antigenic composition, high agglutinability, but are not sensitive to negative and nonspecific sera.

(2) A satisfactory medium which has been used for a long time has the following composition:

| | |
|---|---|
| Water | 1,000 cc. |
| Difco beef extract. | 4 gm. (0.4 percent) |
| Difco Bacto-peptone. | 10 gm. (1.0 percent) |
| Difco dry-granular agar. | 20 gm. (2.0 percent) |
| Reaction-pH | 6.8 to 7.2. |

(3) Large 1-inch test tubes, Kolle flasks of Blake bottles are streaked liberally over the entire agar surface with inoculum from 48-hour slant-agar cultures prepared from stock cultures of the selected strains. The stock cultures may be maintained satisfactorily by transferring to new sloped agar at least once a month and keeping at 18° to 25° C. in a dark closet or chest, following incubation for from 24 to 36 hours at 37° C. The antigenic composition and purity of the stock cultures should be checked consistently.

(4) The antigen-growing tubes or bottles should be incubated 48 hours at 37° C. and the surface growth washed off with a very slight amount of 12 percent solution of sodium chloride containing 0.25 to 0.5 percent phenol, filtered through lightly packed sterile absorbent cotton placed in the apex of a sterile funnel.

(5) The washings should be adjusted (using 12 percent sodium chloride containing 0.25 to 0.5 percent phenol), so that the turbidity is 50 times greater than tube 0.75 of McFarland's nephelometer or to a reading of 7 mm. by the Gates nephelometer.

(6) The individual strain antigens should be tested with negative sera for their insensitivity and with positive sera for high agglutinability in comparison with known satisfactory antigen. The antigens of the separate strains should be combined in equal volume-density and stored in the refrigerator (5° to 10° C.) in tightly stoppered bottles.

(c) The tests should be conducted on a suitable, smooth plate. The serum-antigen dilution should be made so that the dilution will not exceed 1:50 when compared to the standard tube agglutination test. When testing turkey blood samples it is desirable to use a serum-antigen dilution equivalent to the 1:25 in the tube method. The serum should be added to the antigen and mixed thoroughly by use of the tip of the serum pipette. Most strong positive reactions will be plainly evident within 15 to 20 seconds. The final reading should be made at the end of 2 or 3 minutes. Heating the plate at approximately 37° C. will hasten agglutination. Before reading, the plate should be rotated several times.

(d) The results shall be recorded as:

N, or — (negative) when the serum-antigen mixture remains uniformly turbid.

P, or + (positive) when there is a distinct clumping of the antigen, and the liquid between the agglutinated particles is clear.

S, or ? (suspicious) when the agglutination is only partial or incomplete.

M, or missing, when samples listed on the original record sheet are missing.

H, or hemolyzed, when blood samples are hemolyzed and cannot be tested.

B, or broken, when sample tubes are broken and no serum can be obtained.

[3] The procedure described is a modification of the method reported by Runnels, Coon, Farley, and Thorpe, Amer. Vet. Med. Assoc. Jour. 70 (N.S. 23): 660–662 (1927).

(Allowance should be made for differences in the sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent, intelligent judgment must be exercised at all times. Also, the histories of the flocks require consideration. In flocks where individuals show a suspicious agglutination, it is desirable to examine representative birds bacteriologically to determine the presence or absence of S. pullorum.)

Sec. 147.3 **The stained-antigen rapid, whole-blood test.**[4] (a) The description of the preparation of antigen is not herein included because that product is produced only under license from the Secretary of Agriculture in accordance with specific directions.

(b) A loop for measuring the correct quantity of blood can usually be obtained from the manufacturer of the antigen. A satisfactory loop may be made from a piece of No. 20 gage nichrome wire, 2½ inches long, at the end of which is fashioned a loop three-sixteenths of an inch in diameter. Such a loop when filled with blood, so that the blood appears to bulge, delivers 0.02 cc. A medicine dropper, whose tip is adjusted to deliver 0.05 cc. is used to measure the antigen. A glass plate about 15 inches square providing space for 48 tests has proved satisfactory for this work. The use of such a plate enables the tester to have a number of successive test mixtures under observation without holding up the work to wait for results before proceeding to the next bird.

(c) A drop of antigen should be placed on the testing plate. A loopful of blood should be taken up from the wing vein. When submerged in the blood and then carefully withdrawn, the loop becomes properly filled. On looking down edgewise at the filled loop, one observes that the blood appears to bulge. The loopful of blood then should be stirred into the drop of antigen and the mixture spread to a diameter of about 1 inch. The loop then should be rinsed in clean water and dried by touching it to a piece of clean blotting paper, if necessary. The test plate should be rocked from side to side a few times to mix the antigen and blood thoroughly, and to facilitate agglutination. The antigen should be used according to the directions of the producer.

(d) Various degrees of reaction are observed in this as in other agglutination tests. The greater the agglutinating ability of the blood the more rapid the clumping and the larger the clumps. A positive reaction consists of a definite clumping of the antigen surrounded by clear spaces. Such reaction is easily distinguished against a white background. A somewhat weaker reaction consists of small but still clearly visible clumps of antigen surrounded by spaces only partially clear. Between this point and a negative or homogeneous smear there sometimes occurs a very fine granulation barely visible to the naked eye; this should be disregarded in making a diagnosis. The very fine marginal clumping which may occur just before drying up is also regarded as negative. In a nonreactor the smear remains homogeneous. (Allowance should be made for differences in the sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent, intelligent judgment must be exercised at all times. Also the histories of the flocks require consideration. In flocks where individuals show a suspicious agglutination, it is desirable to examine representative birds bacteriologi-

[4] The procedure described is a modification of the method reported by Schaffer, MacDonald, Hall, and Bunyea, Jour. Amer. Vet. Med. Assoc. 79 (N. S. 32): 236–240 (1931).

cally to determine the presence or absence of S. pullorum.)

Sec. 147.4 **Tube agglutination tests for S. typhimurium.** (a) The procedure for the collection and delivery of blood samples in the tube agglutination test for S. typhimurium is the same as that described in section 147.1(a).

(b) The "O" antigen should be prepared as follows:

(1) The antigen shall consist of a representative non-motile strain of S. typhimurium which is of known antigenic composition, high agglutinability, but is not sensitive to negative and nonspecific sera. Strain P 10 meets there requirements.

(2) The stock culture is maintained on 1 percent nutrient agar deeps, which have been incubated for 18–24 hours at 37° C. They are stored at room temperature.

(3) A satisfactory medium used for growing the organism is veal infusion agar (Difco). It is dispensed in 50 ml. amounts into 500 ml. medicine bottles, with screw caps, and sterilized at 15 lbs. pressure for 20 minutes. The bottles are then laid flat upon an even surface until the medium has solidified.

(4) The inoculum used for preparation of "O" antigen is a nonmotile strain of S. typhimurium. The organism is grown in veal infusion broth (Difco) for 18–24 hours at 37° C., then plated, for single colony isolation, on veal infusion agar plates. These plates are incubated for 18–24 hours at 37° C. After incubation single colonies are picked and transferred to veal infusion agar slants, which are incubated for 18–24 hours at 37° C. After this the cultures are tested for smoothness by using a 1 : 500 dilution of acriflavine.

(5) Smooth cultures are inoculated into flasks containing veal or beef infusion broth which is incubated for 18–24 hours at 37° C. The incubated broth suspension of organisms is dispensed into the antigen bottles containing veal infusion agar. The suspension is distributed evenly over the agar surface by gently tilting the bottles from side to side. The inoculated bottles are then laid flat, agar side down, for 10–20 minutes. They are subsequently incubated, agar side upward, for 24–48 hours at 37° C. before harvesting.

(6) The harvesting of the organism consists of washing the growth from each antigen bottle with 0.5 percent phenolized physiological saline. The bacterial suspension from each bottle is filtered through sterile milk pad filters into a large sterile container or through a thin layer of absorbent cotton in a Buchner funnel with the aid of suction. To each 100 ml. of the bacterial suspension is added additional phenol to make the final concentration 0.5 percent. The concentrated antigen is tested for sterility at intervals after 24 hours. After sterility is proved the stock antigen is standardized to determine the density according to the McFarland nephelometer scale.

(7) The diluted antigen to be used in routine testing is prepared from stock antigen by diluting with 0.25 percent phenolized saline and is standardized to a turbidity corresponding to 0.75–1.00 of the McFarland nephelometer scale.

(c) The "H" antigen should be prepared as follows:

(1) Stock cultures of fixed phases, 1 and 2, of S. typhimurium are maintained in semisolid medium containing desired suppression antiserum. However, before using the cultures for the preparation of "H" antigen they should be passed through semisolid medium at 24 hour intervals in order to obtain a high degree of motility and checked for desired phase antigens.

(2) Either a solid or a liquid medium may be used to obtain growth for antigen. The solid

medium is the same as that used in the preparation of "O" antigen. The liquid medium is veal infusion broth, dispensed in 1000 ml. amounts into 2000 ml. flasks.

(3) Each phase is inoculated separately into either solid or liquid medium. The flasks of broth to be used for inoculum of the solid medium are inoculated directly from the semisolid medium. If solid medium is used, the inoculated antigen bottles are handled and incubated in the same manner as when making the "O" antigen.

If liquid medium is used it is inoculated directly from the semisolid culture of bacteria.

(4) Each phase is harvested separately by washing the growth from the antigen bottles, with physiological saline containing 0.6 percent formalin. The washed inoculum is filtered through sterile milk pad filters into a large container or through a thin layer of absorbent cotton in a Buchner funnel with the aid of suction. To each 100 ml. of the bacterial suspension, formalin is added to make the final concentration from 0.5 to 1.0 percent. The stock antigen is tested for sterility at intervals after 24 hours. After sterility is proved the stock antigen is standardized to determine the density according to the McFarland nephelometer scale. Then Phase 1 and Phase 2 antigens are combined so that the stock "H" antigen will contain the same proportions of Phase 1 and Phase 2, as determined by standardization. The "H" antigens prepared from broth are treated with formalin so the final concentration is 0.5–1 percent.

(5) The diluted antigen to be used in routine testing is prepared from stock antigen by diluting with 0.25 percent formalized saline and is standardized to a turbidity corresponding to 0.75–1.00 on the McFarland nephelometer scale. The antigens are stored in the refrigerator (5° to 10° C.) in tightly stoppered bottles.

(d) The maximum serum dilution employed for the "O" antigen tube test must not exceed 1:25. In all official reports on the blood test the serum dilutions should be indicated. The sera should be introduced into the agglutination tubes in the desired amounts with well-cleaned serological pipettes or special serum delivery devices which do not permit the mixing of different sera. The antigen and serum should be well mixed before incubation. The serum and antigen mixture must be incubated for at least 20 hours at 37° C.

(e) The maximum serum dilution employed for the "H" antigen tube test must not exceed 1:25. In all official reports on the blood test the serum dilutions should be indicated. The serum and antigen mixture may be incubated at 45–50° C. in a water bath for 4 hours or at 37° C. for at least 20 hours.

(f) The results shall be recorded as:

N, or — (negative) when the serum antigen mixture remains uniformly turbid.
P, or + (positive) when there is a distinct clumping of the antigen, and the liquid between the agglutinated particles is clear.
S, or ? (suspicious) when the agglutination is only partial or incomplete.
M, or missing, when samples listed on the original record sheet are missing.
H, or hemolyzed, when blood samples are hemolyzed and cannot be tested.
B, or broken, when sample tubes are broken and no serum can be obtained.

## Subpart B—Bacteriological Examination Procedure

Sec. 147.11 **Laboratory procedure recommended for the bacteriological examination of reactors.** (a) The pericardial sac, peritoneum, oviduct and any visibly pathological tissues should be cultured on beef extract agar or tryptose agar by means of sterile swabs. Sterile technique should be followed. (Primary culture of these

organs in a suitable nutrient broth and transfer to a suitable nutrient agar is optional.)

(b) The following organs should be aseptically collected for culture:

(1) Heart (apex, pericardial sac, and contents if present.);

(2) Liver (portions exhibiting lesions or in grossly normal organs the drained gall bladder and adjacent liver tissues.);

(3) Ovary-Testes (entire inactive ovary or testes but if ovary is active use own judgment and include any atypical ova.);

(4) Oviduct (if active include any debris and dehydrated ova.);

(5) Pancreas; and

(6) Spleen.

(c) A composite sample of the organs listed in section 147.11(b) should be ground in a sterile mortar or suitable blender. Individual organs may be used if desired. Nutrient broth should be added as a diluent. Ten cc. of this suspension should be inoculated into 100 cc. of either Selenite F broth or Tetrathionate broth and into 100 cc. of a suitable noninhibitory nutrient broth.

(d) After 24 hours incubation at 37° C. a loopful of the broth cultures from each flask should be streaked on a suitable noninhibitory solid medium such as tryptose agar and one of the following selective media: Salmonella-Shigella (SS), MacConkey, Brillant Green, Bismuth Sulfite, or Desoxycholate Citrate Lactose Sucrose (D. C. L. S.) agar. (All of these media may be obtained in dehydrated form.) If no suspicious colonies are observed after 24 hours incubation the enrichment broths should be restreaked on solid media.

(e) A portion of the crop wall and intestine to include the cecal tonsils are put into either Selenite F or Tetrathionate broth and incubated for 24 hours at 37° C. Transfers should be made from the broth onto agar plates as indicated in section 147.11(d).

(f) Suspicious single colonies should be subcultured on nutrient agar or triple sugar iron agar slants and incubated for 24 hours at 37° C.

(g) Cultures should be transferred to the following fermentable media for identification: dextrose, lactose, sucrose (saccharose), mannite (mannitol), maltose, dulcite (dulcitol) and salicin broths. Suitable tests also should be conducted for the detection of indole, hydrogen sulfide, acetylmethylcarbinol, and urease production. Motility or nonmotility is demonstrated by inoculation of a suitable semisolid medium. For the Gram stain a 24 hour nutrient agar slant culture should be used.

(h) All Salmonella cultures isolated should be serologically typed.

## Subpart C—Procedure for Changing National Poultry and Turkey Improvement Plans

Sec. 147.21 **Definitions.** Except where the context otherwise requires, for the purposes of this subpart the following terms shall be construed, respectively, to mean:

(a) **NPIP.** The National Poultry Improvement Plan.

(b) **NTIP.** The National Turkey Improvement Plan.

(c) **Department.** The United States Department of Agriculture.

(d) **AH Division.** The Animal Husbandry Research Division of the Agricultural Research Service of the Department.

(e) **State.** Any State, the District of Columbia or Puerto Rico.

(f) **USROP or ROP.** U.S. Record of Performance.

Sec. 147.22 **General.** Changes in this subchapter shall be made in accordance with the procedure described in this subpart; *Provided*, That the Department reserves the right to make changes in this subchapter without observance of such procedure when such action is deemed necessary in the public interest.

Sec. 147.23 **Submitting, compiling and distributing proposed changes.** (a) Changes in this subchapter may be proposed by any participant, Official State Agency, the Department, or other interested person or industry organization.

(b) Except as provided in section 147.25(d)(1), proposed changes shall be submitted in writing so as to reach the AH Division not later than 90 days prior to the opening date of the conference, and participants in a Plan shall submit their proposed changes through their Official State Agency.

(c) The name of the proponent shall be indicated on each proposed change when submitted. Each proposal should be accompanied by a brief supporting statement.

(d) The AH Division will notify all persons on the NPIP and NTIP mailing lists concerning the dates and general procedure of the conference. Hatchery, dealer and ROP participants will be reminded of their privilege to submit proposed changes and to request copies of all the published proposed changes.

(e) The proposed changes, together with the names of the proponents and supporting statements, will be compiled by the AH Division and issued in processed form. When two or more similar changes are submitted, the AH Division will endeavor to unify them into one proposal acceptable to each proponent. Copies will be distributed to State officials of the NPIP and NTIP and to ROP participants. Additional copies will be made available for meeting individual requests.

Sec. 147.24 **Official delegates.** Each State cooperating in the NPIP shall be entitled to one NPIP official delegate, and likewise, each State cooperating in the NTIP shall be entitled to one NTIP official delegate. The official delegates shall be elected by a representative group of participating industry members and be certified by the Official State Agency. It is recommended but not required that the official delegates be Plan participants.

Each official delegate shall endeavor to obtain, prior to the conference, the recommendations of industry members of his State with respect to each proposed change.

Sec. 147.25 **General Conference Committee.** (a) The General Conference Committee shall consist of the Poultry Coordinator in Charge, National Poultry and Turkey Improvement Plans, AH Division, and one member to be elected from each of the following regions:

(1) North Atlantic: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania.

(2) South Atlantic: Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida.

(3) East North Central: Ohio, Indiana, Illinois, Michigan, and Wisconsin.

(4) West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

(5) Western: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, and California.

(6) South Central: Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

(b) The committee members will be elected by the NPIP and NTIP official delegates of the respective regions. Each region shall also elect one alternate member. There shall be at least two nominees for each position and the voting shall be by secret ballot.

(c) Three members shall be elected at each NPIP and NTIP Conference. At the 1954 conference, members were elected for

4-year terms for the North Atlantic, East North Central, and Western regions; whereas members were elected for 2-year terms for the South Atlantic, West North Central, and South Central regions. Thereafter, each member of the committee shall serve for a period of 4 years and may not succeed himself.

(d) The duties of the General Conference Committee are as follows:

(1) Determine whether new proposals (i.e., proposals that have not been submitted as provided in section 147.23) may be considered. New proposals will be considered only with the unanimous consent of the committee.

(2) During the interim between conferences, the committee shall represent the cooperating States in:

(i) Reviewing and giving recommendations regarding the Department's report of changes and editing of this subchapter to include the changes.

(ii) Serving in an advisory capacity with respect to administrative procedures and interpretations of the provisions of this subchapter.

(iii) Recommending such administrative changes as may be necessitated by unforeseen conditions when postponement until the next conference would seriously impair the operation of the program. Such changes shall not affect the basic provisions of this subchapter and shall remain in effect only until confirmed or rejected by the next NPIP and NTIP Conference, or until rescinded by the committee;

(iv) Assisting the AH Division in formulating plans for the next conference.

Sec. 147.26 **Committee consideration of proposed changes.** (a) The following six committees shall be established to give preliminary consideration to the proposed changes, falling in their respective fields:

(1) NPIP General Provisions.
(2) NPIP Breeding.
(3) NPIP Disease Control.
(4) NTIP General Provisions.
(5) NTIP Breeding.
(6) NTIP Disease Control.

(b) Each official NPIP delegate shall be appointed a voting member in one of the committees specified in paragraph (a) (1), (2), and (3) of this section and each official NTIP delegate shall be appointed a voting member in one of the committees specified in paragraph (a) (4), (5), and (6) of this section.

(c) Since several of the proposals may be interrelated, the committees shall consider them as they may relate to others, and feel free to discuss related proposals with other committees.

(d) The committees shall make recommendations to the conference as a whole concerning each proposal. The committee report shall show any change in wording and the record of the vote on each proposal, and suggest an effective date for each proposal recommended for adoption. The individual committee reports shall be submitted to the chairman of the conference, who will combine them into one report showing, in numerical sequence, the committee recommendations on each proposal.

(e) The committee meetings shall be open to any interested person. Advocates for or against any proposal should feel free to appear before the appropriate committee and present their views.

Sec. 147.27 **Conference consideration of proposed changes.** (a) The chairman of the conference shall be a representative of the Department.

(b) At the time designated for voting on proposed changes by the official delegates, the chairman of the General Conference Committee and the six committee chairmen shall sit at the speaker's table and

assist the chairman of the Conference.

(c) Each committee chairman shall present the proposals which his committee approves or recommends for adoption as follows: "Mr. Chairman. The committee on NPIP General Provisions recommends the adoption of Proposal No. —, for the following reasons: I move the adoption of Proposal No. —." A second will then be called for. If the recommendation is seconded, discussion and a formal vote will follow.

(d) Each committee chairman shall present the proposals which his committee does not approve as follows: "Mr. Chairman. The committee on NPIP General Provisions does not approve Proposal No. —." The chairman will then ask if any official delegate wishes to move for the adoption of the proposal. If moved and seconded, the proposal is subject to discussion and vote. If there is no motion for approval, or if moved, but not seconded, there can be no discussion or vote and the proposal is thereby rejected.

(e) Discussion on any motion must be withheld until the motion has been properly seconded, except that the delegate making the motion is privileged, if he desires, to give reasons for his motion at the time of making it. To gain the floor for a motion or for discussion on a motion, the official delegate in the case of a motion, or anyone in case of discussion on a motion, shall rise, address the chair, give his name and State, and be recognized by the chair before proceeding further. While it is proper to accept motions only from official delegates and to limit voting only to such delegates, it is however, equally proper to accept discussion from anyone interested. To conserve time, discussion should be pointed and limited to the pertinent features of the motion.

(f) Proposals that have not been submitted in accordance with section 147.23 will be considered by the conference only with the unanimous consent of the General Conference Committee. Any such proposals must be referred to the appropriate committee for consideration before being presented for action by the conference.

(g) Voting will be by States and each cooperating State will be allowed one vote. Unless otherwise arranged, the NPIP official delegate shall cast his State's vote on changes affecting the NPIP, and the NTIP official delegate shall cast his State's vote on changes affecting the NTIP.

(h) A roll call of States for a recorded vote will be used when requested by a delegate or at the discretion of the chairman.

(i) All motions on proposed changes shall be for adoption.

(j) Proposed changes shall be adopted by a majority vote of the official delegates present and voting.

(k) The conference shall be open to any interested person.

Sec. 147.28 **Approval of conference recommendations by the Department.** Proposals adopted by the official delegates will be recommended to the Department for incorporation into the provisions of the NPIP and NTIP. The Department reserves the right to approve or disapprove the recommendations of the conference as an integral part of its sponsorship of the NPIP and NTIP.

## Subpart D—Sanitation Procedures

Sec. 147.31 **Flock sanitation.** To aid in the maintenance of healthy flocks the following procedures should be practiced.

(a) Chicks or poults should be started in a clean brooder house and maintained in constant isolation from older birds and other animals. Personnel that are in contact with older birds and other animals should take precautions, including

disinfection of footwear and change of outer clothing, to prevent the introduction of infection through droppings that may adhere to the shoes, clothing or hands. (See section 147.34(a).)

(b) Young stock should be grown on range that has not been used for poultry for at least one year. Where broods of different ages must be kept on the same farm, there should be complete depopulation of brooder houses and other premises following any contagious disease.

(c) Poultry houses should be screened and proofed against free-flying birds. An active rodent eradication campaign is an essential part of the general sanitation program. The area adjacent to the poultry house should be kept free from accumulated manure, rubbish and unnecessary equipment. Dogs, cats, sheep, cattle, horses, and swine should never have access to poultry operations. Visitors should not be admitted to poultry areas and authorized personnel should take the necessary precautions to prevent the introduction of disease.

(d) Poultry houses and equipment should be thoroughly cleaned and disinfected prior to use for a new lot of birds. (See section 147.34(a).) Feed and water containers should be situated where they cannot be contaminated by droppings and should be frequently cleaned and disinfected. Dropping boards or pits should be constructed so birds do not have access to the droppings.

(e) Poultry house floors, other than slats or wire, should be well covered with an absorbent type of litter. Frequent stirring of the litter may be necessary to reduce excess moisture and prevent surface accumulation of droppings. Slat or wire floors should be constructed so as to permit free passage of droppings and to prevent the birds from coming in contact with the droppings. Nesting areas should be kept clean and, where appropriate, filled with clean nesting material.

(f) When an outbreak of disease occurs in a flock, dead or sick birds should be taken, by private carrier, to a diagnostic laboratory for complete examination. All Salmonella and Arizona cultures isolated should be typed serologically and complete records maintained as to types recovered from each flock within an area. Records should be kept on isolations and these records made available to Official State Agencies or other animal disease control regulatory agencies in the respective States for followup of foci of infection. Such information is necessary for the development of an effective Salmonella control program.

(g) Introduction of started or mature birds should be avoided to reduce the possible hazard of introducing infectious diseases. If birds are to be introduced, the health status of both the flock and introduced birds should be evaluated.

(h) In rearing broiler or replacement stock a sound and an adequate immunization program should be adopted. Since different geographic areas may require certain specific recommendations, the program recommended by the State experiment station and other State agencies should be followed.

Sec. 147.32 **Hatching egg sanitation.** Hatching eggs should be collected from the nests at frequent intervals and, to aid in the prevention of contamination with disease causing organisms, the following practices should be observed:

(a) Cleaned and disinfected containers should be used in collecting the eggs and precautions taken to prevent contamination from organisms that may be present on the hands or clothing of the person making the collection.

(b) Dirty eggs should not be used for hatching purposes and should be collected in a separate

container from hatching eggs. Slightly soiled eggs may be dry cleaned by hand or motor driven buffer.

(c) The visibly clean eggs should be fumigated as described in section 147.35(a) as soon as possible after collection.

(d) The fumigated eggs should be stored in a cool place. Eggs should be stored no longer than necessary before setting. Racks used for storing eggs should be properly cleaned and disinfected.

(e) New or clean, fumigated cases should be used to transport eggs to the hatchery. Soiled egg case fillers should be destroyed.

Sec. 147.33 **Hatchery sanitation.** An effective program for the prevention and control of Salmonella and other infections should include the following measures:

(a) The hatchery building should be arranged so that separate rooms, with separate ventilation, are provided for each of the four operations: Egg receiving, incubation and hatching, chick holding, and disposal of offal and cleaning of trays. These rooms should be placed under isolation so that admission is granted only to specifically authorized personnel who have taken proper precautions to prevent introduction of diseases.

(b) The hatchery rooms, and tables, racks, and other equipment in them should be thoroughly cleaned and disinfected frequently. All hatchery wastes and offal should be burned or otherwise properly disposed of, and the containers used to remove such materials should be cleaned and sterilized after each use.

(c) The hatching compartments of incubators, including the hatching trays, should be thoroughly cleaned and fumigated after each hatch.

(d) Only clean eggs should be used for hatching purposes. All eggs set should be fumigated prior to setting or as soon as possible (preferably within 12 hours) after they are placed in the incubator. They should also be fumigated after transfer to a separate hatcher. (See section 147.35.)

(e) Only new or clean, fumigated egg cases should be used for transportation of hatching eggs. Soiled egg case fillers should be destroyed.

(f) Day-old chicks, poults or other newly hatched poultry should be distributed in clean, new boxes. All crates and vehicles used for transporting started or adult birds should be cleaned and disinfected after each use.

Sec. 147.34 **Cleaning and disinfecting.** (a) In the poultry houses and hatchery rooms:

(1) Settle dust by spraying lightly with the disinfectant to be used.

(2) Remove all litter and droppings to an isolated area where there is no opportunity for dissemination of any infectious disease organisms that may be present.

(3) Scrub the walls, floors and equipment with a hot soapy water solution. Rinse to remove soap.

(4) Spray with a cresylic disinfectant, such as liquor cresolis saponatus, 4 ounces to the gallon of water, or sodium orthophenylphenate, 1⅓ ounces (1 heaping tablespoonful) to a gallon of hot water.

(b) In the hatchers:

(1) Remove trays and all controls and fans for separate cleaning. The ceiling, walls and floors should be thoroughly wetted with a stream of water, then scrubbed with a hard bristle brush. Rinse until there is no longer any deposit on the walls, particularly near the fan opening.

(2) Replace the cleaned fans and controls. Replace the trays, preferably still wet from cleaning, and bring the incubator to normal operating temperature.

(3) The hatcher should be fumigated as described in section 147.35 (e) prior to the transfer of the eggs.

(c) If the same machine is used for incubating and hatching, the entire machine should be cleaned after each hatch. A vacuum cleaner should be used to remove chick down from the egg trays, then the entire machine should be vacuumed, mopped and fumigated according to the procedures described in section 147.35(b) (3), (4) and (5).

Sec. 147.35 **Fumigation.** Fumigation of eggs and incubators is an essential part of a hatchery sanitation program. Single or repeated fumigation of eggs in the setter may be practiced but the fumigation schedule should be such that no eggs are fumigated during the period from the 24th to the 84th hour of incubation.

(a) Preincubation fumigation of eggs should be done as follows:

(1) Provide a room or cabinet proportionate to the number of eggs to be handled. The room should be relatively tight and equipped with a fan to circulate the gas during fumigation and to expel it after fumigation.

(2) The eggs should be placed on wire racks, in wire baskets, or on cup-type egg flats stacked outside of the egg cases (to permit air circulation) and exposed to circulating formaldehyde gas.

(3) Formaldehyde gas is provided by mixing 0.6 grams of potassium permanganate with 1.2 cc of formalin (37.5%) for each cubic foot of space in the room. The ingredients should be mixed in an earthenware or enamelware container having a capacity at least ten times the volume of the total ingredients.

(4) Circulate the gas within the room for 20 minutes, then expel.

(5) Humidity for this type of fumigation is not critical but the temperature should be around 70° F. Extra humidity may be provided in dry weather.

(b) Eggs which have not been fumigated prior to setting should be fumigated as soon as possible (preferably within 12 hours) after setting, using the following procedure:

(1) Determine the size of the incubator by multiplying the length times the width times the height.

(2) After setting the eggs and allowing temperature and humidity to regain normal operating levels, release formaldehyde gas into the incubator.

(3) For each cubic foot of space in the incubator use 0.4 grams of potassium permanganate and 0.8 cc of formalin (37.5%). Use an earthenware or enamelware container having a capacity of at least ten times the volume of the total ingredients. (See paragraph (f) of this section.)

(4) Close vents and doors but keep circulating fan operating and continue fumigation for 20 minutes with normal operating temperature and humidity.

(5) After 20 minutes of fumigation, the vents should be opened to the normal operating positions to release the gas.

(c) Eggs which have not been preincubation fumigated as described in paragraph (a) of this section or fumigated as soon as possible (preferably within 12 hours) after setting as described in paragraph (b) of this section should be fumigated after the 84th hour of incubation. The procedure described in paragraph (b) of this section should be followed.

(d) All eggs should be refumigated after transfer to a separate hatcher, preferably as soon as the temperature and humidity regain normal operating levels. The procedure described in paragraph (b) of this section should be followed.

(e) Empty hatchers should be fumigated between each hatch. After the interior of the hatcher has been thoroughly cleaned and the cleaned trays returned, the

following procedure should be followed:

(1) After temperature and humidity are brought to normal operating levels, use 0.6 grams of potassium permanganate and 1.2 cc of formalin (37.5%) per cubic foot of space in the hatcher. (See paragraph (f) of this section.)

(2) Close the doors and vents and leave closed at least 3 hours and preferably overnight.

(f) The cheesecloth method of fumigation described in this paragraph may be used in lieu of the chemical method described in paragraph (b) of this section, using 0.6 cc of formalin (37.5 percent) per cubic foot of space in the incubator, or paragraph (e) of this section, using 0.9 cc of formalin (37.5 percent) for each cubic foot of space in the empty hatcher.

(1) Enough cheesecloth should be used to absorb all of the formalin that is to be used for the fumigation.

(2) The formalin-saturated cheesecloth should be hung in the cabinet in such a manner as to permit the circulating air to evaporate all the formalin. This will require longer than 20 minutes.

(3) Care should be taken to prevent the cheesecloth from blocking the air movement created by the fans.

(4) The cheesecloth method is not suitable for still air machines.



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